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U. S. FIFTH ARMY IN ITALY
Employs improvised Cavalry, mounted on captured German and Italian horses.

NOVEMBER-DECEMBER, 1943

The United States Cavalry Association

Organized November 9, 1885

The aim and purpose of the Association shall be to disseminate knowledge of the military art and science, to promote the professional improvement of its members, and to preserve and foster the spirit, the traditions, and solidarity of the Cavalry of the Army of the United States.—Article III, Constitution.

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Cavalry and Tanks Capture Taganrog ★

by Guards Colonel G. Valyushkin

IN the course of this war Soviet cavalry units have frequently acted in conjunction with tank groups and, jointly with them, have achieved not only tactical but also strategical successes.

One of the most instructive instances of coördination between these two mobile arms was the operation that ended in the encirclement and annihilation of the German army group at Taganrog. In this operation, large Soviet cavalry and armored forces broke through to the enemy's rear and, advancing rapidly southward to the Azov coast, smashed German resistance and contributed materially to the success of the operation. Throughout this difficult raid, cavalry and armored groups acted in closest coöperation. The result was that the German army group at Taganrog lost all of their communications and, in spite of desperate attempts to break out of the encirclement, were unable to do so.

Forms of Combined Cavalry-Tank Employment

Coördination between cavalry formations and tanks may take diverse forms. Sometimes cavalry and tanks act independently while performing a common mission and merely maintain a general agreement. At other times, a tank group may be assigned to a cavalry formation and take its orders from the cavalry commander. Again, a situation may arise where it is found expedient to exercise both forms of coördination—strategical and tactical—with a part of the tanks acting independently and a part assigned to cavalry. Naturally, on each occasion, a careful study of conditions must be made to decide which forms and methods of coördination are likely to be most effective.

Tanks on the Cavalry's Flanks

How did cavalry and tanks coöperate in the Taganrog raid?

First, it was necessary to insure reliable protection for the flanks of the cavalry while it opened a breach in the enemy's defenses. Accordingly, armored formations were thrown out on both flanks.

The task of the right flank formation was to parry any blows that the enemy might deal from the west. It was highly likely that the Germans might try to stem the cavalry advance by attacking the right flank, or they might even attempt a breakthrough in the hope of rescuing their Taganrog army group. In fact, the Germans did make such an attempt. They brought up fresh reinforcements and attacked in force with up to two regiments of infantry and fifty tanks. This attack was made in coördination with an attack from the east by part of their Taganrog group, in the hope of closing the breach and enabling their surrounded forces to retire to the west. The presence of the Soviet armored detachments on the flanks of the cavalry frustrated the enemy's plans.

The armored formation on the cavalry's right flank then turned toward the enemy's Taganrog group, which possessed large numbers of tanks and self-propelled guns. Advancing somewhat ahead of the cavalry, this formation encountered the powerful German screening

★By cable to The Cavalry Journal from the War Department, U.S.S.R., Moscow. The units involved in the Taganrog operation were not listed in this article, but Stalin's Order of the Day for August 30, 1943 (printed, September-October issue) commended two cavalry divisions and two tank brigades for action in the victory at Taganrog.

The Nazi defeat at Taganrog is second only to that at Stalingrad. In both cases, the Red Army victories resulted from *the successful employment of combined cavalry-tank formations,* used as great, mobile pincers which surrounded the enemy and brought about his complete annihilation.

By secret paths, through fields and forests and across swollen streams, Cossacks make their way behind the German lines.

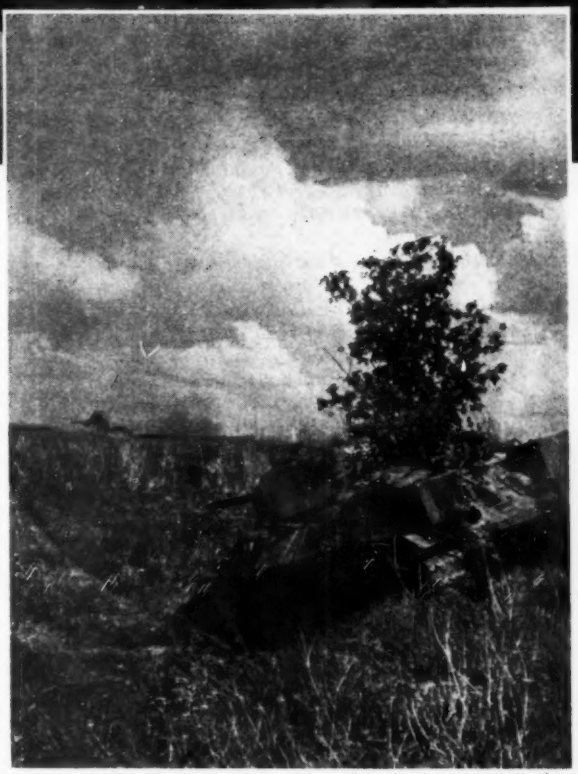
forces, intrenched in favorable positions, and helped smash the enemy's resistance.

Thus the cavalry was reliably protected on its right flank and, in case of need, could have called for support on its left flank. In both cases, coördination presented a particular difficulty, as the tasks had been laid down clearly in orders from the higher command.

Mutual information and close coöperation were maintained by wireless and by liaison officers.

Tanks Spearhead Advance

In addition to these two tank units on the flanks, this particular cavalry formation had its own tank groups assigned to it. In such a case, of course, coördination was even closer and was maintained by different methods. For instance, it was clear in advance that the raiding cavalry would encounter strong resistance. This had to be broken without delay in order to allow the Germans no time in which to re-form their defense. For this purpose, Major General Tutarinov's division of cavalry guards was assigned a tank group, which took its orders directly from the cavalry commander. The tanks advanced in the lead and, annihilating small scattered enemy detachments, blazed a trail for the cavalry. Here, coördination was constant and uninterrupted. It was



Sovfoto.

Tanks, advancing in coördination with cavalry, may cover the cavalry's flanks, spearhead the break-through for cavalry to exploit, or act independently under the cavalry command.

further maintained by personal contact between the cavalry and tank commanders, by wireless, and by dispatch riders.

STALINGRAD, TAGANROG
— *and now* —
Soviet Tanks-Cossacks Seal Crimea

By Henry Shapiro (United Press Staff Correspondent) Moscow, Oct. 29—Cossacks, narrowing the Nazi escape corridor in the Dnieper-Nogaisk bulge to less than 80 miles, smashed the main enemy stronghold southwest of the Dnieper bend and advanced through weak resistance today in an attempt to trap hundreds of thousands of fleeing Germans. . . .

The Cossacks were pounding toward the lower reaches of the Dnieper and a junction with General Ivan Konev's armies battling in the streets of the mineral center of Krivoi Rog, halfway across the Dnieper bend, to close one of the biggest Russian traps since Stalingrad. . . .

Moscow, Oct. 30—Thousands of demoralized German troops cast aside their arms today in frantic flight from Soviet forces which had driven halfway across the Nogaisk Steppes to within 40 miles of the last land exit from the Crimea.

Cossack flying columns slashed into the enemy rear and rounded up prisoners by the hundreds.

The Russian spearheads also were only 15 miles east of Kakhova, where they were expected to force the Dnieper and drive almost due north in an attempt to link up with General Ivan Konev's forces at Krivoi Rog and encircle the largest German army since Stalingrad. . . .

London (Sunday), Oct. 31 (AP)—The second battle of the Crimea began today with General Feodor Tolbukhin's steppe legions hammering at its northeastern gate and plunging down the last 22-mile lap toward Perekop to slam shut that northwestern escape door on huge German forces in the peninsula. . . .

In the south, Tolbukhin's cavalry-paced columns spread over the great steppe like a flood, reaching the shores of the Sivash or "putrid" sea, formed by a thin bar of land between the eastern shore of the Crimea and the Sea of Azov.

One Cossack column swept into Dmitrievka, 16 miles from the Dnieper at Kakhovka. The Russians thus were swinging into position for at least two crossings of the river, at Kakhovka and near Nikopol where Russian forces were beyond Blagovyeschenskoe, only 5 miles from the river.

Such crossings would strike the rear of reinforced Germans defending Krivoi Rog and the last remnants of German-held territory in the Dnieper bend.

London, (Monday), Nov. 1 (AP)— . . . Sweeping up 200 more villages and reconquering nearly all the Nogaisk Steppe, a Moscow bulletin announced, General Feodor Tolbukhin's hard-riding fourth Ukraine army captured Chaplinka, flanking the Perekop door in the Crimea 15 miles to the southeast, and reaching a point only 8 miles from the railway itself, which leads to Kherson on the lower Dnieper River. . . .

On the opposite side of the big Black Sea peninsula other floundering German forces were declared cut to pieces by General Tolbukhin's tank crews and Cossack cavalry which hurled them into a death corridor at the northeastern door of the Crimea.

Cavalry Dismounts—Tanks Support

As the cavalry advanced farther southward, however, resistance grew more fierce. The Germans realized that the noose was being tightened around their necks. They threw out strong screening forces and launched increasingly ferocious counterattacks in an attempt to withdraw their Taganrog group westward. The counterattacks were particularly fierce in one area, where Germans had approximately 12 artillery batteries of self-propelled guns, many tanks, and a large force of infantry. These forces were supported by bombers, which launched frequent mass attacks (as many as 1,200 sorties in one day).

Naturally, these conditions called for different forms of coördination between tanks and cavalry. The cavalry dismounted and fought on foot. The tanks, acting as the cavalry's direct support, helped it in the attacks by demolishing the enemy's fire nests with their guns and by crushing the Germans beneath their tracks.

The Germans' frequent counterattacks were parried by fire from Soviet troops, or else by the stubborn defense on some one sector combined with a vigorous outflanking move on another. In former cases, tanks would fire from one position, while from another they would act as a main shock force in an outflanking maneuver.

In one area, German infantry columns, accompanied by about 100 guns, attempted to break through toward the west, but encountered one of the Soviet cavalry divisions. Roads along which the German forces were moving were clearly visible for a considerable distance. This made it possible to inflict heavy losses upon them by concentrated fire and cause them to recoil backward. The cavalry divisional commander had all of his available guns moved into open positions. It was expedient to launch tanks into the attack, as the enemy possessed formidable artillery, including self-propelled guns. The tanks, therefore, were ordered to fire from position. The enemy's losses in lives and matériel were heavy. After the action, the roads were littered with enemy corpses, shattered guns, and vehicles.

Tanks as Battering Ram—Cavalry Exploits

At last the Germans' Taganrog group was annihilated and the Soviet troops, overwhelming and pursuing the enemy, began to advance westward. German tactics at this stage were subordinated to one aim—namely, to stem the advance at all costs. The natural terrain favored this, as the Red Army route of advance was intersected by a number of rivers, along which the retreating Germans erected strong intermediate defense lines. One such line was erected on the western bank of the River Gruzkov Elanchik.

A careful study showed that these defenses could best be breached by a strong armored shock force. On orders from the commander of the cavalry formation, all tanks assigned to him were united into one group and placed under the commander of one of the cavalry divisions. This powerful armored force broke through the enemy's defenses. The cavalry division, in mounted

order, immediately dashed into the breach and was soon followed by the remaining forces of the formation.

This action demonstrated another form of tactical coördination between cavalry and tanks, with the combined force used as a battering ram to force a breach in the enemy's defenses for cavalry to exploit.

Complete Coördination

In subsequent fighting, forms of coördination were likewise modified to meet conditions. In a number of cases, groups of tanks were assigned to cavalry units for the performance of separate missions. If it was necessary, however, to form a powerful assault force, the tanks united into one group under the direct orders of the formation commander. This technique of coördination presented no particular difficulty, as Soviet cavalry had had considerable experience in coöperating with tanks under the most diverse circumstances; while tank crews, on their part, did their utmost to facilitate constant and efficient collaboration.

The most important conclusion to be drawn is that in each particular case, careful study must be made of the conditions and utmost effective methods of coördination chosen to correspond with them.

On the organizational side, there are no serious difficulties to be overcome so long as cavalry, fighting dismounted, maintains communication with tanks in the same way as infantry would.

If tanks and cavalry are coöperating in an operation to outflank or surround the enemy, efficient and uninterrupted liaison is of the utmost importance. This can be achieved in many and various ways—from wireless and aircraft to personal contact between the cavalry and tank commanders.

Sovfoto Radiofoto.

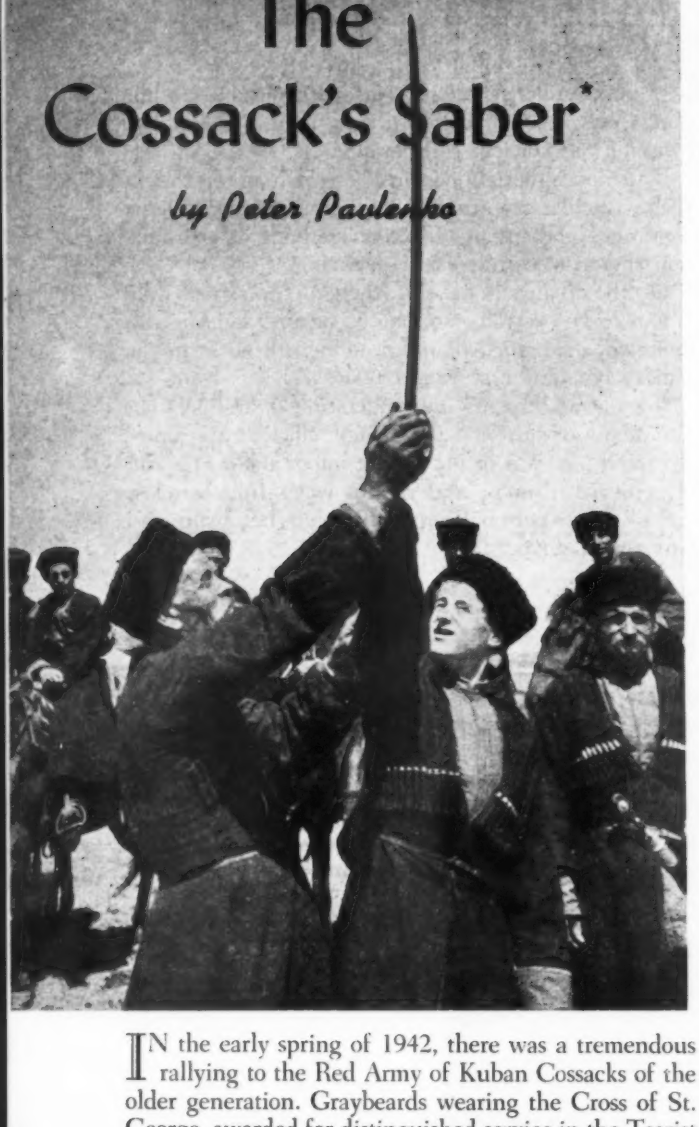
Cossack guardsmen commanded by Lieutenant General N. Kirichenko made their way through rushes to the rear of the enemy for a surprise attack. General Kirichenko and his Kuban Cossacks were commended by Marshall Stalin in his Order of the Day, August 30th, for outstanding service in the capture of Taganrog.

Sovfoto Radiofoto.

Behind the German lines near Taganrog, General Kirichenko's Cossack Guardsmen played an important rôle in the encirclement of large German forces.

The Cossack's Saber*

by Peter Pavlenko



"If the Germans don't like it, they should have stayed at home in Germany."

IN the early spring of 1942, there was a tremendous rallying to the Red Army of Kuban Cossacks of the older generation. Graybeards wearing the Cross of St. George, awarded for distinguished service in the Tsarist wars, gathered to volunteer. Many of their sons were already majors and colonels. They, the fathers, joined up as rank and file fighters.

Nikifor Natluck, a patriarchal old Cossack whose sons are prominent Red Army commanders, proposed that young Cossacks should be taught the immortal saber blow of the famous Zaporozhye Cossacks.

"The German must be slashed from the shoulder to the groin," he said. "Anyone can cut off a head or slice off an arm, but a Cossack must wield his saber as his great-grandfathers did."

Another of the instructors is Trofim Njegoduyko. At 54 years of age, he is a senior sergeant, a volunteer in the Red Army. He fought near Moscow with the immortal Dovator; and later, back home in the Kuban, in Tseplyayev's motor brigade.

Trofim's grandfather hewed through a Turkish horseman from shoulder to waist. All the papers were full of it at the time. In 1914, near Gumbinen, Trofim's father cut up a German in six parts with two blows of his sword. It was the famous "criss-cross" blow, and the fame of it drew young officers to study with Alexander Njegoduyko. He showed them how to cut a calf in two, or a piece of cloth thrown up into the air.

Trofim Alexandrovich has upheld the honor of his family. Back in the days of the Civil War his comrades presented him with an old, silver-hilted sword with an Arabian inscription on the blade: "I serve the eagle-hearted." The silver hilt is now covered with 131 copper dots like freckles. That is Trofim's score of killed Germans. Trofim Alexandrovich says that eight dots are missing; they dropped off by accident.

Not all of the 139 Germans were cut up. Many of them tasted lead bullets; others were destroyed with the rifle butt or crushed under Trofim's horse. With his sword he killed 43 Germans. One of his slashes he dedicated to his grandfather. "Even Grandfather Petro would have approved of it." It was near Rostov . . . With one blow he cut a German officer in three parts—head and shoulders, half the body and an arm, and the rest of the body.

Now he has been invited to show young Cossacks the art of sword play. Upright on his horse, he gallops spiritedly up to the clay figure of a German with outspread arms. The young men have been hacking away unsuccessfully at this "German" since the early morning. But their swords have got stuck in the moist clay at the level of the heart, or they have struck off only the head, which of course cannot be considered a decent stroke. Even a child can strike off a head.

So 54-year-old Trofim Njegoduyko, with set teeth, dashes up on his russet horse. The sword glitters brightly in his hand. He rises in his stirrups, raises the blade, and the clay German falls in two pieces.

Trofim, reining in his horse, explains: "The hardest thing, my lads, is to cut clay. I can feel no hatred for a clay figure, and therefore there is no heat in doing it. Why do I cut it? Only for the sake of your education. But my heart's not in it. I feel no anger. The conclusion to be drawn from this is that it is easier to strike at a German. In the first place, he usually turns tail. So if you stick a sword into him he'll run up it himself. He'll cut himself up. In the second place, you've got to apply pressure along the length of the blade, not downwards. It's not the same as chopping wood.

"Use your imagination. Pretend that the German is very broad and you're cutting him open like a cake. Don't hurry. Take it easy.

"Of course, psychology plays a part, too," adds Trofim mockingly. "But it's none of our business if a German yells.

"If the Germans don't like it, they should have stayed at home in Germany. But once they've come onto our territory, friend, crying won't help. Run, damn you, run up the blade!"

**Soviet Information Bulletin.*

"Die Kossacken Kommen!"

*by Henry Shapiro**

SABER-SWINGING Cossack horsemen brought the Dnieper Estuary within their grasp and sent the greatest rout of a German army since 1916 into its final stages today with the slaughter of thousands of fleeing survivors of the Reich's once crack Grenadiers on the western Nogaisk Steppes.

Hordes of Germans plunged into the swift Dnieper in a frantic effort to escape the Cossacks, only to be cut down by Russian machine-gunners and low-flying Soviet aircraft. Front dispatches said the river was filled with German corpses.

The whole western tip of the Nogaisk Steppes, from the Black Sea to the great sand wastelands below the Dnieper had become a veritable graveyard of smashed and abandoned tanks, six-barreled mortars and armored cars.

Not since General Rusilov's destruction of an Austrian army in 1916 has there been a Russian victory to compare with the smashing of German Marshal Erich Van Manstein's army of the Nogaisk Steppes.

As in the First World War, the cry, "Die Kossacken Kommen"—The Cossacks are coming—spread through the enemy ranks, sowing the seeds of a terror such as even the 300,000 Germans killed or captured at Stalingrad never knew.

The Don and Kuban Cossacks, who dislike taking prisoners, literally slashed the fleeing enemy columns to pieces. While sabers were their main weapons, some carried tommy guns which they frequently fired from beneath their horses' bellies in Hollywood cowboy style.

A dispatch to the Communist newspaper Pravda said Russian infantry following the advance guards of Cossacks and tankmen were moving across the steppes in a solid wall along the 27 miles between the Black Sea and the Dnieper. Their escape cut off, thousands of Germans perished in the dunes and lagoons at the western end of the dyrpprd. Other thousands surrendered and trudged eastward in endless columns paralleling similar lines of civilians returning homeward after being freed from German guards who were herding them westward for slave labor.

Advance guards were within 12 miles of the Dnieper Estuary port of Kherson.

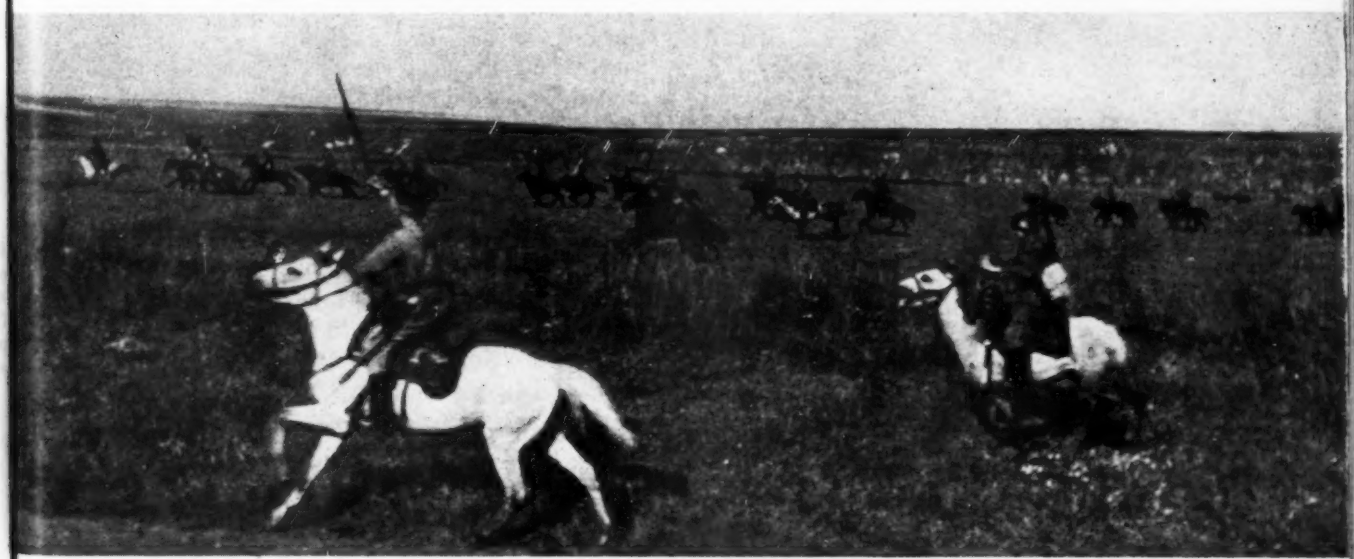
Only below Nikopol were the Germans making any organized resistance. There they were counterattacking in a desperate effort to permit a fraction of their forces to escape to the north bank of the Dnieper.

The army organ *Red Star* said the Germans threw a considerable air force into the battle of the river crossings.

The extent of the German rout was reflected by the Cossacks' 25-mile advance yesterday—the biggest Russian gain in a single day since the start of the war. More than 80 towns and villages were overrun.

More than 2,000 Germans were killed in one sector of the Nogaisk Steppes, while in another a German infantry regiment—normally 3,000 men—was dispersed and partly wiped out and its entire armament captured.

*United Press Staff Correspondent, Moscow—Reprinted from *Washington News*, Nov. 4, 1943.



"Die Kossacken Kommen"—The Cossacks Are Coming.

MORE POWER FOR A

by

*Brigadier General Rufus S. Ramey**

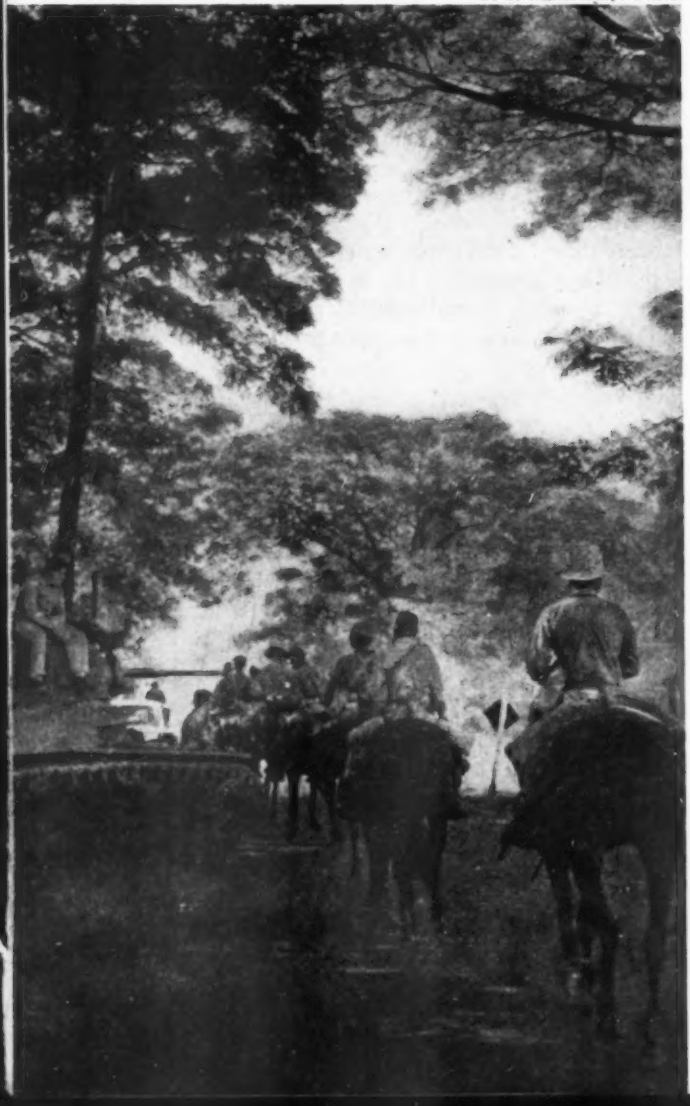
FROM the successive tragedies at Pearl Harbor, Bataan, and Corregidor, the United States has been able to recover and build its war machine to an unprecedented size that will continue to increase until every vestige of Axis resistance has been overrun and crushed. Every day adds new parts or means, found necessary during the participation of our forces in major operations under all the extremes of climate and terrain of this global war.

In the beginning, the urgency of the situation dictated that precedence be given to building up certain particular arms and services. To a degree, that condition will persist in order to meet unforeseen eventualities. To a large extent, however, the stage of preparation has been reached where attention should now be turned to balancing the machine. Other parts can now be developed that will increase the efficiency and, in turn, decrease the time that it will take to win the war.

One part of our war machine, which could not have precedence during the early phases of the war, was cavalry. The many immediate needs for other types of units justified a temporary deferment of the organization and training of cavalry units at that time. But that urgency is past. Now, the test of the need for any organization, item of equipment, or other means of warfare is the degree of its contribution to victory.

If our present war machine and our general situation are examined dispassionately and the lessons from our recent combat experiences are projected into the future, a scientific, practical analysis reveals, not only the urgent need for cavalry on the future battlefields of this war, but also the practicability of providing such units in sufficient strength to be a valuable asset to our combat forces.

U. S. Signal Corps Photo.



A unit of the 26th Cavalry moves into Pozzorubio, Dec. 20, 1941. The 26th Cavalry, the only U. S. cavalry regiment to participate actively in this war, covered General MacArthur's withdrawal into Bataan and made possible the valiant stand that enabled the United States to gain time to arm.

Combat Progress That of the Man on Foot

Two major changes have occurred since our entry into this war—changes in the whole concept of ground organization and tactics, which have been brought about by experience in the conflict.

The first of these factors is the recession from the extremes of motorization of our ground forces. Influenced by our own peacetime tendencies, by deductions from the Spanish Civil War, and the German speed of conquest in Czechoslovakia, Poland, France, and the Balkans, we came to the conclusion that anything less than the speed of a motor vehicle on the ground was archaic, and, therefore, had no place in our system of organization of ground units. Proceeding on that premise, we motorized everything—our infantry, cavalry, field artillery, and the units that supply and service them. At the time, this appeared to be sound and justifiable. With our entry into active combat, however, we found that we had been too optimistic regarding the manner in which operations would proceed.

Our visualization of the speed with which units could move on the battlefield was rudely changed by the enemy. We found that once contact was made, progress normally was that of the man on the ground. The advance became a struggle for every foot gained. We found that the enemy stopped or slowed the operation

*Commandant, The Cavalry School.

ATTLE

"Provisional Mounted Reconnaissance Troops," organized in Italy and mounted on captured German and Italian horses, have been aiding the Fifth Army's advance toward Rome. A United Press dispatch says that "most of the troopers were cow punchers or farm boys who have been riding from youth. One or two were star rodeo performers."

U. S. Signal Corps Photos

of our motorized and mechanized units by the use of guns on the ground and aircraft above. In addition, that devilish development of this war, the land mine, has infested every area where a motor or mechanized vehicle could reasonably be expected to operate.

Foot elements were able to advance under such conditions, but this advance was usually laboriously slow, and often at the expense of units getting beyond their supporting weapons and supplies. Such weapons, ammunition, and subsistence that have gotten forward have often had to be moved by the hands and backs of men.

The picture is not complete with only a consideration of our experiences in the African and European theater of war. Our operations in the Pacific area have been on terrain where the motor and mechanized vehicles either cannot operate or are restricted to operation around the beaches and on trails hacked through the jungle. Here again, to an even greater degree, movement of weapons, ammunition, subsistence, and evacuation of casualties have had to be made by soldiers on foot.

It may be claimed that this will continue to be true in the jungles of the Pacific islands. True, except that it has already been found that pack horses and mules have contributed immeasurably to lessening the burdens of fighting units and to increasing their effectiveness. It

Sovfoto.

Red Army scouts in the Caucasus reconnoiter difficult terrain during the winter campaign of 1942-43 that climaxed in the fall of Stalingrad.

is imperative that we look to the future when we must operate on the mainland of Asia—in Burma, India, China, and elsewhere. Even there, the ability of motor and mechanized vehicles to operate will still be tremendously limited by terrain seriously lacking or completely devoid of roads.

Need for Cavalry

Wherein does cavalry enter into the picture; how can horse units influence present day operations or facilitate them? To answer that double-barreled question, it is necessary to examine critically our own and Allied experiences to date, along with the probable conditions that will confront us in future operations.

In line with our extensive motorization and mechanization, we have converted much of our cavalry to mechanized reconnaissance units. Some have already proved their value in Tunisia, Sicily, and Italy. They have sought out and furnished the vital information necessary to enable the higher commanders to maneuver and employ their units. Inevitably, however, in terrain that denied the use of vehicles, in areas where enemy mines and demolitions predominated, the mechanized reconnaissance units have had to leave their vehicles and proceed on foot while examining terrain and removing mines or bridging demolitions to pass their vehicles. In such a case, the mechanized reconnaissance unit was slowed to the speed of the units for which it was seeking information. These conditions adversely affect its value. Not only is the reconnaissance unit's progress slow, but so is that of the other combat elements. Under such circumstances, the enemy has the initiative.

Under these conditions, which such enemy action enforces, we have one degree of mobility—that of the dismounted man—against an adversary who retains several degrees of mobility. No matter what the nature of his intended operation—defense, delay, retreat, or attack—he forces our troops to conform to him. Eventually, we must reverse the picture. Tactically, as well as strategically, we must force the enemy to meet the situation that we dictate.

Wherein and how can horse cavalry *change* the picture, improve our situation, give us battlefield initiative over the enemy?

Two factors operate to deny us the initiative. First, wherever possible, the enemy takes advantage of the terrain which can neutralize our mobility—vehicles. Second, his use of mines, demolitions, and weapons force us to a time-consuming advance—the rate of men on foot. This applies both to reconnaissance units and the combat elements for which the information is sought. Cavalry can supplement or augment mechanized reconnaissance and dismounted combat units.

The horse-mounted rifleman, scout, gunner, radio operator, ammunition carrier can usually go wherever a man on foot can go, with the important difference of moving much faster. How radically this would change

many situations. What a difference a few cavalry units would have made in Tunisia, Sicily, and Italy! These thoughts projected into the future can be applied to the difficult terrain of the Balkans, Norway, other parts of Europe, India, Burma and China. The need for horse cavalry units, both as reconnaissance to supplement mechanized cavalry reconnaissance and as combat units, will become more pressing as our operations progress in almost every theater. In addition, we shall need pack units in many theaters to serve not only the cavalry units but all other ground units.

This reasoning is not purely speculative, or hypothetical. In the course of their operations, commanders in various theaters have felt the serious need for cavalry units—reconnaissance, combat, and pack.

MacArthur, Eisenhower and Patton are all reported to have recognized many uses for cavalry, but this recognition was qualified by the critical need for shipping space, which at the time outweighed the advantage that would have accrued. Many subordinate commanders in the African Campaign improvised horse units both for supply and other tactical uses. Many others are reported to have felt the serious need and lack of such units. During the campaign in Sicily, cavalry would have been most valuable for maintaining contact with the enemy and exploiting successes. In many cases, it would have denied the enemy the time to install weapons, demolitions, and mines.

British and French Experience

From reliable reports it appears that the British in

Press Association.

Right: **Canadian soldiers in Sicily use mules purchased from Italian farmers.**

Below: **A pack transport unit in New Caledonia is trained by U. S. cavalrymen for operations in the South Pacific.**

U. S. Signal Corps Photo.

Tunisia made frequent use of horse reconnaissance and supply units. These units had to be improvised on the spot out of requisitioned animals mounted by men without special training. How much more effective would they have been had trained units been available! Yet it appears that these hastily improvised units rendered invaluable service.

A portion of the Free French forces, in both North Africa and Sicily, were native French Moroccan troops, mounted on native horses and commanded by French officers. These Goumiers assisted both U. S. and British units in Tunisia. From there they entered the campaign in Sicily, where one of their outstanding contributions was the capture of Capizzi. This action contributed materially to the fall of Troina, which broke the German resistance and opened the way to Messina. In typical American cavalry fashion, Goumiers use their animals for transport to the point of combat, then dismount to fight on foot.

Lessons from Russia

Experience on the Russian front has added even more impressive and convincing testimony of the part that cavalry is playing in this war.

Although a large part of Russia's most productive area was overrun and ravished, and her armies pushed back to the Volga, she has not only reconstituted her fighting forces and factories, but has trained and equipped new armies to the point where, from a precarious defense, she has turned and launched the most powerful, successful sustained offensive of any of the Allies against the major weight of German might.

At the outbreak of the war with Germany, information credits the Russians as having from 30 to 40 cavalry divisions. During the dark days of 1941 and 1942, the Russians might have dismounted those cavalry divisions to reconstitute other critically needed units. But they did not. Rather, they used the mobility of their horse cavalry to prevent the disaster that threatened.

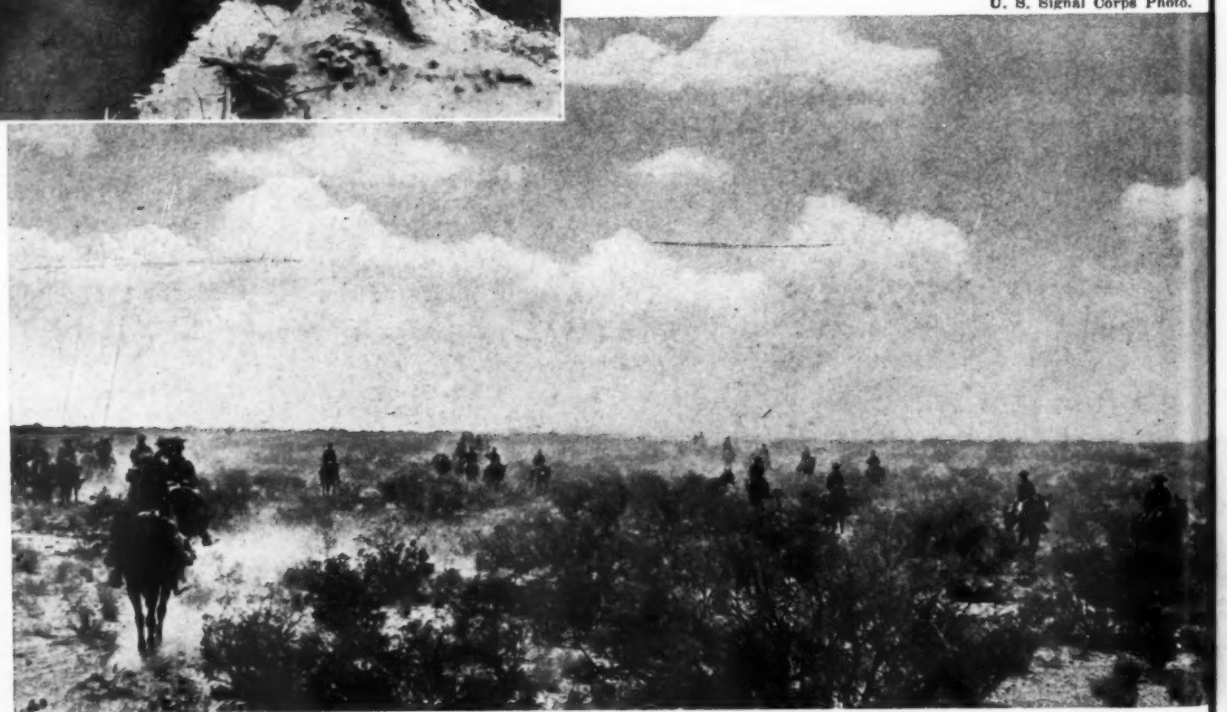
While their depleted and disorganized forces were being reconstituted and reëquipped, Soviet cavalry played havoc with the German lines of communications and rear installations. With the launching of the great

U. S. Signal Corps Photo.

Left: **A U. S. Cavalry patrol on a reconnaissance mission training at Fort Riley, Kansas.**

Below: **A unit of the 56th Cavalry Brigade participates in maneuvers near Fort Bliss, Texas.**

U. S. Signal Corps Photo.



Soviet counteroffensive, which has driven the German armies implacably back toward the German frontiers, the Russian cavalry has vindicated the wisdom of the leaders who retained it during the dark days when there must have been strong temptation to dissipate the horse units by dismounting them.

The value of the work of the cavalry may be judged, to cite only one major instance, on the occasion of the clearing of the Rostov area and the recapture of Taganrog. In an Order of the Day on August 30, 1943, Stalin cited two cavalry divisions—the 9th Kuban Cavalry Division of Guards and the 30th Cavalry Division. In other Orders of the Day Stalin has frequently cited cavalry units as a part of what appears to be a strictly Russian team combination—"the Soviet cavalry-tank-mechanized-infantry team." The coördinated efforts of this combination have brought brilliant victories for the various Red armies and disaster to the Germans.

Natural Deductions

In addition to appreciating these historical facts about the Russian cavalry operations, one other fact must be underlined. The Russian operations in 1942 and 1943 were carried out under circumstances and conditions very similar to those that will confront United States, British, and French armies in Italy and elsewhere in Europe when other fronts are established.

Already there is confirmation of this. A United Press dispatch from Italy on September 25, 1943 reported: "A new type of American cavalry, known as the Provisional Mounted Reconnaissance Troop and composed of volunteers who are experienced horsemen, has gone into action on the Salerno front." The superficial part of the dispatch—"new type of cavalry"—can be overlooked. The pertinent fact is that a horse cavalry unit was improvised to meet the demonstrated urgent need for the special capabilities of horse cavalry.

The time has come when we should provide any available means that will speed or increase the effectiveness of our existing forces in current or future operations. Although there was a shortage of shipping space in the beginning that prohibited the use of cavalry overseas, that situation is rapidly changing. Under date of October 6, 1943, we are informed that the United States alone has exceeded our most optimistic expectations by some three million tons of shipping and that we now have reached the point where shipping will become increasingly more available. We should now be able to provide ships to move all the means that are required by our commanders in the various theaters of war.

Our Horse Supply

We have in our Remount Depots at various points in this country already trained animals sufficient to mount a reasonable force of cavalry. They were trained in horse units that have been changed to mechanized units or transferred to other activities. In addition to those trained animals, we could procure in this country, within a period of 60 to 90 days, as many more suitable mounts for the training of the troopers.

If it appeared advisable to train cavalry units in this country, then move them overseas without their animals, and there remount them with animals procured in the overseas theater, numerous sources exist where the requisite animals can be procured. Australia alone has available sufficient highly suitable horses to mount several cavalry divisions. India, Iran, Syria, and other countries of the Middle East, can provide animals for operations in the Balkans, Italy, Burma, India, or China.

There are several advantages to procuring animals in the general area of the world where the operations are to take place: the added burden of ships is avoided; the animals are already acclimated; and the forage to which they are accustomed can be furnished—all without necessity for transport from the U.S.A.

Conclusion

There is a demonstrated need for cavalry in this war. The need will undoubtedly increase. Its effectiveness has long since been established. However, we do not have a sufficient amount of cavalry at the present time. Organization of new cavalry units presents a double training problem—both horse and man must be trained, and this requires time.

If cavalry will add to the effectiveness of current or projected operations, if it will hasten our ability to destroy the enemy in any theater, then we should no longer defer the formation and training of new units. Individual commanders should not have to improvise such units—as has happened in Tunisia, Sicily, and Italy.

CAIAZZO, Oct. 21— . . . The general, a doughty former cavalryman, had had his camps shellacked by German artillery some time before we saw him, but he was as dapper, businesslike and pleasant as ever. Most of his outfit has been in steady action since the Volturno crossing—fighting in perpendicular country and winning all the way. He was somewhat relaxed at the moment because he had gone just as far as he could without capturing the town assigned to his colleague on the right.

He indulged, as is his wont, in bemoaning the absence of a cavalry division in Italy. The great disappointment of this man is that he hasn't been able to coop up and capture a large number of Germans and he blames it all on the fact that his men have had to move on foot through the wild mountain country in which they have been fighting.

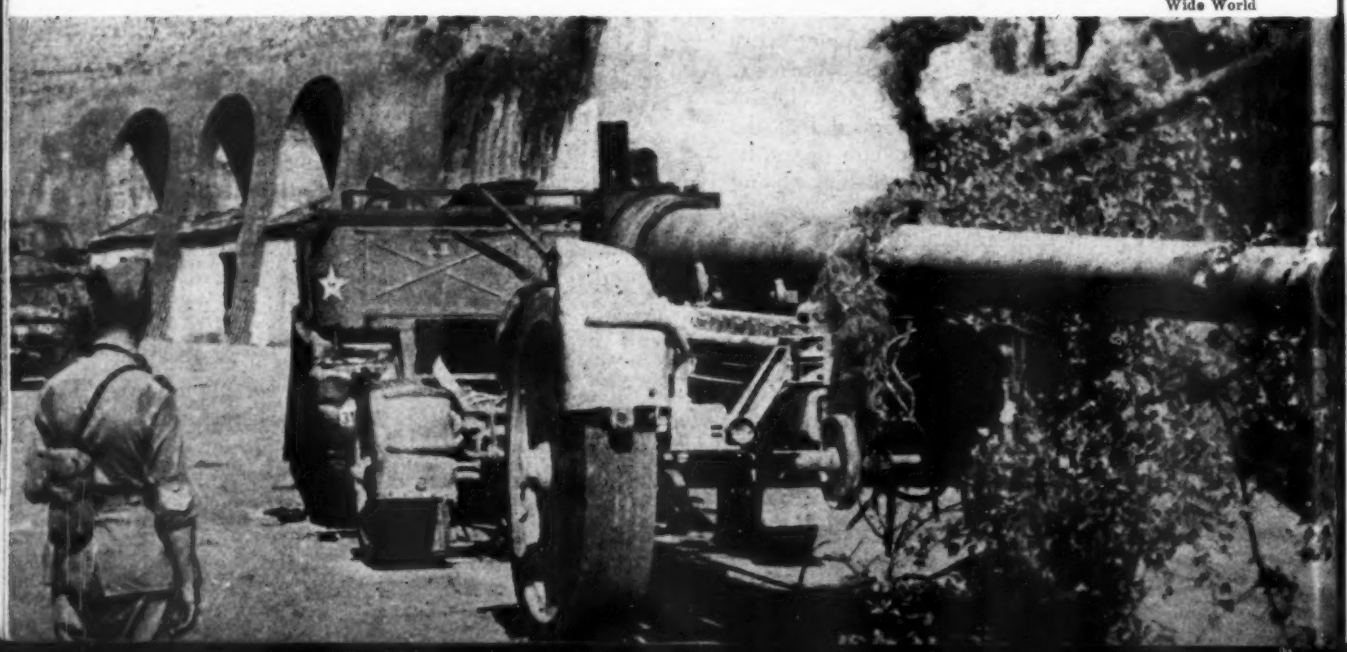
He has managed to piece together a pint-size pack-mule and mounted infantry outfit, but it only whets his appetite for some first-class horse stuff.—William H. Stoneman, *The Louisville Times*.

U. S. Fifth Army On Italian Front

Two soldiers of the U. S. Fifth Army crouch in undergrowth in the Salerno area of Italy. Scene is from a newsreel film.

Press Assn.

German Mark IV tanks, destroyed by Allied mortar fire, line the roadside near Cava—between Salerno and Naples. Note spaced armor on sides of turret.



This German 210mm field gun barrel on limber drawn by half track vehicle was intercepted by Commandos while on the road to Vietri, northwest of Salerno, and the crew were killed.

Wide World

Press Association.

American infantrymen advance on a German observation post within sight of Mt. Vesuvius. The OP was established in a castle near the mountain.

An armored reconnaissance car captured from the Nazis by U. S. troops in Italy is being driven back to the rear. Soldiers tie white cloths to their rifles to avoid being fired upon by their comrades.

Press Association.

Engineers begin construction of the main ponton bridge which spanned the Volturno River in the central sector of the front in Italy. The bridge was used for heavy equipment such as trucks and tanks.

RECONNAISSANCE L

*by Lieutenant Colonel Charles J. Hoy**

The cavalry has been given the job of training and providing troops for all reconnaissance units. This is a traditional cavalry rôle that is a part of cavalry heritage.

Cavalry has always been trained in the art of reconnaissance—"to look far afield, to be inquisitive, and to take nothing for granted."

THE 81st Reconnaissance Battalion of the 1st Armored Division had more battlefield experience in Tunisia than any other American reconnaissance battalion or squadron. It first went into action against the enemy on January 15, 1943, and did continuous battle reconnaissance duty until the end of the campaign May 9.

The information contained in this article is based upon more than four months' combat experience, during which time the battalion was called upon to do all types of reconnaissance—over terrain that varied from the desert in the south to the green rolling hills of the north; under tactical operations that varied from withdrawal and defeat to pursuit and victory; and against an enemy that changed from a determined foe to a beaten one.

The battalion made its share of mistakes, but learned to benefit by them. Training was continuous, even under combat conditions. The training received in the United States, Ireland, and England was sound, but constant training during battle was imperative.

Information

Information is the most powerful and most important weapon a reconnaissance unit can furnish the higher commander. To have its full effect, it must be accurate, complete, and quickly passed.

Inaccuracy. It is the duty of every reconnaissance leader to fight rumors, lies, and exaggerations with the same enthusiasm that he fights the enemy. A good rule to follow is, "Never believe a straggler, and rarely believe a casualty." The former generally lies or embellishes to explain his absence from the battlefield; the latter is seldom rational. Inaccurate information is dangerous. Men should be impressed with the necessity for guarding the integrity of their reconnaissance.

Accuracy. To be accurate in his information, a man on reconnaissance must always know his own location. He cannot pinpoint the enemy correctly unless he knows this. If he is mounted, a constant check on his vehicular odometer, maps, and air photos is necessary; but once he halts and moves dismounted to an observation post, he must pinpoint himself by the use of the alidade method or by resection.

All reconnaissance personnel must be able to identify quickly and *accurately* both friendly and enemy vehicles, weapons, personnel and aircraft. This is most difficult to do at long range or when visibility is poor; therefore, if there is any doubt of the correct identity of either personnel or matériel, they should be reported as *unidentified.* A "guess" is hazardous.

All enemy guns are not 88mms, nor are all enemy tanks Mark VI's. Almost everyone at first is prone to report all enemy large caliber weapons that they hear or whose projectile they see strike, as an 88mm. In fact, they will sometimes report a large mortar shell that explodes near them as an 88, too. Everyone should be able to tell the difference between a high velocity, flat trajectory weapon and a low velocity, high angle artillery piece. For example, the muzzle blast of the antitank gun has a distinct, sharp crack and a never-to-be-forgotten whistle as it zips past. The artillery piece has a comparatively dull boom and a droning sound as it sails over.

Some information will be secondhand. When it is, its source must be reported in order properly to evaluate it. Unfortunately, much of the information gotten from civilians is embellished, either by their political feelings or by their excitement or fear. Some of it, however, is extremely valuable.

Native Guides. For six weeks during the Tunisian campaign, the 81st Reconnaissance Battalion had about 30 native French troops (Goumiers) attached to it. Each platoon had three or four of these soldiers and

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SONS FROM TUNISIA

used them as guides and interpreters. They were of great value and assistance to the reconnaissance platoons. They knew the country and the people. They functioned just as old American Indian scouts did for troops in the West. On one occasion, they saved a platoon of Company B, which had been cut off by the Germans during the Kasserine phase of the campaign. Goumiers with that platoon guided them over an unguarded pass that the Germans had considered impassable. An effort should be made to get native troops or guides with all reconnaissance platoons.

Completeness. For information to be complete, everything, however small, must be reported. What seems insignificant up front may mean much more farther back. The complete picture is made up from the supposedly unimportant small details. This must be done without becoming verbose or jamming the radio with a lot of unnecessary babble.

Here is an example of what is meant by completeness of enemy information.

One reconnaissance platoon took an enemy 88mm gun that had been abandoned. Upon examination, it was found that the gun had been prepared for destruction, with a pull-type igniter. The enemy had left in such haste that he had failed to pull the igniter. If the reconnaissance platoon had reported "enemy 88mm gun captured," this would not have been complete information. Instead, the report correctly said that the gun was abandoned, prepared for destruction, but not destroyed.

Evaluation. Further consideration of this situation brings out another point—the platoon leader's reaction when he found the gun. He had been working forward with difficulty that morning, against a determined enemy. This abandoned undestroyed gun, unless it had been planted as a ruse, was one of the first indications that the enemy was beginning to crack. The lieutenant had to evaluate this information for his own use, and decide whether he should continue to reconnoiter cautiously or rush boldly. The more battlewise a reconnaissance soldier becomes, the quicker and easier it will be for him to make this decision. He should be trained to recognize signs that indicate an enemy changing from an orderly withdrawal to a rout.

Code. For information to be passed back quickly, a permanent sequence or form should be used. This enables the same message to be passed from platoon to corps without the asking of endless questions, and also insures speed and accuracy. Complete familiarity with proper voice procedure on the radio is mandatory. Each squadron should have a simple code that is clear, brief and somewhat secret.

Observation. In Tunisia, it was found that most of the collecting of information was done dismounted. Observation posts were used extensively. These posts were gained for the most part by stealth. It must be understood that in a war of movement there is no front line, and it is quite possible for a small crew to go dismounted deep into enemy territory and establish an observation post. This was generally accomplished as follows:

The reconnaissance platoon, moving by bounds, comes under accurate enemy fire; it has gained contact. Long range antitank and artillery fire cannot be considered contact with the enemy. The platoon must get in under this fire. Usually it can be done mounted, but once under accurate short range fire, the men will generally have to dismount. The platoon takes cover from the enemy fire, and the leader, after a short terrain study, will pick the best place to establish an observation post.

The observation team is picked, with the minimum number of men selected to establish and maintain it. A radio is dismounted. (The 510 was found to be fairly reliable, but it is believed that the 511, if available, would be much more satisfactory.) The leader normally will accompany the observation team, as the person most qualified in reconnaissance should be where he can see best. While using all cover, concealment, and camouflage possible, the men move stealthily to the observation post. Because of the situation, they may sometimes have to wait until darkness to get there.

Once established on the observation post, the leader pinpoints his position and notes his range of vision in all directions. He reports this information and the situation back to his commanding officer.

The good reconnaissance leader must possess, in addition to many other military attributes, an insatiable curiosity. He should always try to improve his position so that he can see more—a sort of a "yonder-pastures-are-greener" attitude. Several times in Tunisia it was possible to maintain observation posts behind the enemy position, or even on top of hills held by the enemy. Tall buildings were sometimes used as observation posts.

Reports. In addition to regular and emergency reports, the observation post commander must make a "last light" and "first light" report. Just before darkness he searches his area with his field glasses, notes any enemy information, negative or positive, and transmits it back to higher headquarters. This is called the "last light" report. Its value and necessity can readily be seen, and it should be SOP for all reconnaissance units. The "first light" report is similar, but is accomplished at dawn.

Listening Post. The observation post is of little or no value at night, so a listening post is the night substitute. The listening post is established so as to cover the probable avenues of approach open to the enemy, such

as a main road, a pass, or important road junction.

Assume that a reconnaissance platoon is organized into three teams, each team having an armored car and two bantams. The first team establishes the observation post, while one of the other two prepares to establish the listening post. Routes to and from the listening post are reconnoitered in daylight if possible. Movement to the listening post is generally made during darkness.

In Tunisia a team of three men was found to be sufficient to man the listening post. The vehicles of the team were brought up as close as possible and bivouacked there for the night. When necessary, the 510 radio was dismounted and carried forward to the listening post team. Reports were made at least once an hour.

Once informative contact is gained, it must never be lost.

Communication

If information is the most powerful weapon of the reconnaissance unit, then certainly communication is information's vehicle. The 81st Reconnaissance Battalion had SCR-193's and SCR-510 radios. Later on, it was issued the SCR-536 radio. During the first half of the campaign, when the battalion was covering a very wide front, the 193's never failed; voice communication was possible over long ranges. The 510 was used quite frequently as the dismounted set at an observation post or a listening post. It is believed that the 511, which is much lighter, will be more reliable.

Nets. The assigned nets used in the beginning (one for each company in addition to a battalion net), did not prove satisfactory. First, the platoon leader, reporting the information, called his company commander; then the company commander went to the other set and sent the message to the battalion commander. Quite frequently, the battalion commander would find it necessary to ask the lieutenant a question—not always because his message was incomplete, but rather because of new developments arising during battle. Much time would then elapse before the answer was received. Not only was this delay objectionable, but these radio nets tied the company commander down to his CP. Instead of using his ability as a battlefield commander, he became a glorified message center clerk. He could not leave his CP in order to visit his advanced platoons. After a few weeks of this, all the platoon and company commanders' sets came in on the battalion net.

There were two possible disadvantages to using a single battalion net. First, there was the danger of having too many sets on the net. (Sometimes there would be more than 18 sets on a net.) The other objection was that by having the battalion commander deal directly with the platoon leaders, the company commanders' prerogatives were usurped.

Discipline. It was found that the first problem could be solved by rigidly disciplining the net. The men quickly realized that there could be no extraneous "bull" or chatter; the radio was to be used only for business. It was further found that, although there might be 18 sets on the net, seldom if ever, were there more than two or three platoons in actual contact with the enemy at any given time.

Orders. The other disadvantage can be solved by the battalion commander following the chain of command, in issuing orders. This does not mean that he should not be able to deal directly with the platoon leader in asking questions or advising him. For example, in Tunisia the 18th Army Group usually kept a "phantom group" at battalion headquarters. This "phantom group" was commanded by an officer who had a radio in direct contact with General Alexander's headquarters. Given a copy of each message sent back to divisional headquarters, this "phantom set" would then send it back to 18th Army Group headquarters at the same time that it was sent to division. Group headquarters never issued an order to the battalion commander, but it did ask questions and gave information and advice that was of great help.

Check. In addition to the many sets on the battalion net, a set from the division artillery would sometimes come in. If men are trained in radio discipline, however, an additional set is not too much to handle.

Another advantage in the use of a battalion net is that it gives the battalion commander a closer check on the proficiency of platoons. A single net also enables all the platoon leaders to know the battalion situation at all times. This is essential. It is strongly recommended that the squadrons train to operate, if necessary, with all platoon and troop sets on one net. Once they become proficient with this net, all other nets are easy. The 506 radio set with its push buttons should make the squadron nets very flexible.

Commanders should visit their advanced elements, but they should not leave their CP unless they have communication with it. The driver can operate the radio (a 193 set in a bantam), so that there need never be a time that the commander is out of communication with his headquarters.

Administration

In Tunisia, it was found that administrative functions could be carried on even under the most difficult conditions, such as existed during the early days of the campaign when it was impossible, because of tactical conditions, for the reconnaissance battalion to be pulled back to a rear area to rest and refit.

Reserves. Each company tried to keep a platoon in reserve at all times. During the time that a platoon was in reserve, the company maintenance section worked on its vehicles; the communication sergeant checked the radios; and the platoon as a whole worked on the vehicles and weapons. The mess truck usually stayed with the company headquarters so that it was possible to feed the reserve platoon hot meals. After the platoon was refitted and resupplied, it would go out and relieve one of the other platoons. Then that platoon would come back, refit, and resupply, and go out to relieve the

third platoon. In this way, it was possible to relieve a platoon at least every five days. Whenever it was possible to bring a company back in reserve, the battalion maintenance section would come up from the trains and work on the company vehicles, and the communication officer and noncommissioned officer would supervise the radio repair.

It was during these times that the men washed their clothes, got haircuts, took baths, wrote letters, and were visited by the chaplain. The company commander, first sergeant, and the supply sergeant caught up with their paper work. This paper work would include special requisitions for clothes, reports necessary for citations, and entries in the morning report with respect to killed, wounded, missing and captured.

Quite frequently the company in reserve was busier than the other two companies, for in addition to administrative and maintenance duties, training had to be conducted during this period. One of the hardest jobs that a company commander has during this time is to keep from letting up. It is granted that the men are tired and weary, but it is criminal to let them loaf during this period in reserve. By that, it is not meant that they should not be allowed to rest, but it should be made certain that they are ready to go back into action better trained than when they came out.

The Wounded. Of course, some administrative functions continue right up on the battlefield. Medical evacuation is one. The T/O for the battalion called for three medical officers and one dentist. Permanent medical teams were made up for each company. The battalion surgeon stayed with battalion headquarters. One doctor with a half-track ambulance and bantam and medical crew went with A company; one with B company. The dentist with a similar team went with C.

Evacuation of the wounded generally was accomplished as follows: The wounded man was immediately treated by his comrades. First aid kits in each vehicle contained bandage, sulfa, and morphine. The platoon leader would notify company headquarters and tell them whether he could send the wounded man back, or if he wanted the ambulance sent forward. If the ambulance was sent forward, the medical officer would accompany the ambulance. He had to know how to read a map and know the situation on his front because since there was no front line, he had to be sure of his location. The medical officer would treat the patient. Many times a plasma transfusion was necessary, and it would be done on the spot. The wounded man would then be taken back and, depending on the situation and the condition of the patient, the battalion surgeon would determine whether the man was to be taken to the company command post, to the battalion CP, or back to the division collecting station.

Usually, the battalion surgeon would pick up the patient at the company CP and take him back to the division collecting station. Sometimes the company medical officer, because of the patient's condition, would take the patient to the division collecting station himself. The medical battalion of the division kept their stations pushed well forward.

If the man was wounded at an OP, dismounted litter bearers would bring him back where he could be picked up by the medical bantam, or by the ambulance.

The Dead. Another administrative function that must continue on the battlefield is the evacuation of the dead. This is a very important command function. The morale of an outfit is greatly affected by this. Bodies of former comrades should not be allowed to lie for any length of time where they will have to be seen. They should be gotten back at once. There are many solutions to this problem.

In Tunisia the company commander generally would get some kind of transportation out to pick up the body. Quite often this would be the ambulance. This vehicle was used only when it would not interfere with the evacuation of the wounded. Usually, battalion headquarters would learn about this death at the same time that the company commander did. The chaplain would be notified. If he were at the trains, he would report out to the battalion CP and find out what transportation was available to bring the body back to the graves registration unit. The supply truck that took supplies out to that company would most likely be available; and further, it was empty and had to go back to the dumps for refilling.

Casualties. All units are prone to exaggerate their casualties at first, but this is a dangerous practice that too often spreads rumors on the battlefield. Nine out of ten times, a reported "50% casualties" will turn out to be not over 5%. Casualties should not be reported by percentage anyway; they should be verified and then reported exactly. When the battle casualty report is exaggerated, it causes the same effect as if those men were actually incapacitated, because the commander believes the report received, and his immediate battle decision is often influenced by it.

Supplies. The resupplying of a reconnaissance battalion, especially when it is in operation over a very wide front, is most difficult, but the 81st Reconnaissance Battalion never failed to accomplish its missions because of inadequate supply. Corps and division dumps were pushed well forward. The battalion S-4 always knew where these dumps were, and worked very closely with the headquarters company commander who commanded the trains. The battalion trains were kept about two hours distance behind us—between the dumps and the battalion CP. A small truck train of about five trucks with gas, oil, ammunition, and rations under the command of the S-4 stayed up front close to the battalion CP.

On receipt of the daily report, necessary supplies would be sent to the companies, usually at night. If the S-4 used a truck of gas and a truck of ammunition one night, the train commander would send another truck of gas and another one of ammunition on up to the S-4.

The empty trucks would continue on back to the train commander, and then on to the dumps for replenishment.

The companies must make accurate reports for replacements and replenishment.

Morale

The *esprit* of an outfit is one of the greatest contributing factors to its success in battle. A soldier fights primarily for his unit. He knows that he is in any particular battle because his unit is; therefore, he will be influenced by what his buddies think of his actions on the battlefield. If his unit has a good *esprit*, he will give a good account of himself on the battlefield. If the men in an outfit are proud of their unit, the unit can be said to have good *esprit*. The pride should not be false—it should be warranted. The soldier is proud of his outfit if he knows that his outfit has a reputation among the battlewise troops as being battleworthy; that is, obedient and determined under fire. He will never want to disgrace his outfit by his actions, attitude, or appearance. There are some few who seem to believe that undisciplined and unmilitary troops are the best for battle. The men who fought in Tunisia know that they would rather have fought that kind of an enemy.

Tactics

Fluidity. Tactics must be fluid, so that the unit is capable of operating successfully against a determined enemy as well as against a cracking or cracked one. Platoons must be trained to react immediately to any signal or order from the platoon commander, or to any normal set of circumstances.

Mines. These are usually the worst obstacle with which reconnaissance units have to deal. Each platoon of the 81st Battalion had a mine detector. The primary purpose of mine-laying is to delay. To effect casualties is secondary. Unfortunately, when a reconnaissance unit is pursuing, it must take chances. It cannot creep along behind the mine detector. Speed is essential. The 81st, therefore, led with its heavier vehicles and generally discovered mines by the explosion, cleared a small path through the field, marked it, reported it and went on. Reconnaissance leaders must develop a sixth sense in locating mine fields. The enemy cannot lay them everywhere, so he generally lays them in bottlenecks, by-passes around a blown bridge, or on the shoulders of a road. His tactics of mine-laying must be studied constantly. Here again is an example of why training on the battlefield is absolutely necessary.

Purpose. Ordinarily, a reconnaissance unit will not fight for its information. This does not mean that it need not be aggressive. It takes "guts" and drive to slip past the enemy, get behind him, and stay there transmitting information. But reconnaissance by fire should not be used promiscuously. If the enemy's morale is high, firing is likely to be nothing but a waste of ammunition; however, if it is low, a shot into the bushes may flush him.

One thing that reconnaissance personnel must remember at all times is that no matter how much is seen, it may not be the whole picture. They cannot expect, for instance, to have artillery always sent up to shell any target designated.

A reconnaissance unit is out there to furnish information—not to make plans.

Personal Notes from Battle Experiences

*As Told by Captain Maurice H. Harris**

To Lieutenant L. R. Barnhill

OFFICERS entering combat zones must make drastic revisions in what they consider personal necessities if they are not to be loaded down with useless equipage that will hamper their efficiency on the battlefield.

In most instances officers' needs at the front can be met by government issue items. Because many officers in Africa were not cognizant of this fact, by the time that they went into action they had personal clothing and equipment scattered all the way from North Ireland to their base at Constantine. Even bedrolls were either stowed or lost during the early stages of action.

Officers in Africa learned to get along with the same items as their men. This entailed leaving bulky bedrolls behind and using GI blankets.

"When you leave for a combat zone, leave your personal sidearms at home along with your other trinkets. They will be next to useless to you in battle where you cannot get ammunition to fit them.

"Leave rings and jewelry at home, and toss the fancy dog tag strings into the ocean. A shoestring or piece of

*Captain Harris commanded the Reconnaissance Company of the 701st TD Battalion in Tunisia.

cloth tape is suitable for the front lines. Get a GI watch if possible. There's no watch repair shop at the front to pamper your favorite timepiece.

"Allot all your pay except a minimum of perhaps $50.00 a month to your nearest of kin, and do this well in advance of the time you leave this country. Money is a nuisance at the front and there is neither time nor opportunity to sign pay vouchers once you are in action. Money is received only at such times as the unit returns to divisional headquarters.

"Have a shoulder holster made for your .45 caliber automatic. The regulation hip holster is in the way and is easily snagged when working around tank destroyer vehicles.

"Learn to shave with toilet soap to eliminate another item from your personal gear. Get a small metal case for your toilet articles. The usual leather cases used by officers in the area of the interior are too bulky for battlefield use and are easily lost."

Organizational equipment, even the company CP tents, were stored at the Constantine base along with the officers' uniforms. Wool underwear, fatigue suits, Red Cross knitted sweaters, when available, and combat suits were worn in battle. After the early stages of the fighting, three-quarter length leather boots were provided to replace leggings and regulation shoes.

Officers using field glasses fitted small leather caps over the eye pieces to keep out water and dirt and prevent reflections that might give away their positions. The caps are so made that they slide back on the carrying straps when the glasses are in use. They are easily slipped back in place when the glasses are not in use.

Every officer must know the characteristics of every weapon within his unit.

In some cases, French-type sets on radio equipment were replaced with headsets after it was found that calls were frequently missed when the would-be receiver had the French set lying on the seat, out of hearing distance. By wearing headsets the men were always ready to hear call signals. This proved efficacious in battle.

It is suggested that noncommissioned officers' schools might be set up on the order of the officer candidate schools, except that the graduates would be considered prospective NCO's. In battle each vehicle becomes a combat unit within itself, and the NCO must take charge. Weak NCO's can be the biggest failing in battle.

A unit frequently employed on night security missions is hindered in its ability to conduct daytime reconnaissance. Such crippling can be minimized by using the pioneer platoon for night security missions.

Protection of march units against aircraft fire was gained by some outfits through the use of a warning screen and employment of a cone of fire. Warning of approaching aircraft was sounded by jeeps running from two to three miles on the flanks and to the front of the column. (This distance varied with the terrain situation.) Through prearranged signals, these outguards warned the main body of approaching aircraft. The column units immediately fanned out in a rough oval—even numbers to the left and odds to the right—and threw up a cone of fire with every available weapon. In most instances this beat off attacking aircraft.

Reconnaissance vehicles were used only to transport observers from one observation point to another. Actual observation was done from the ground. Orders to reconnaissance units from higher headquarters should indicate how it wants negative, as well as positive, information reported. In Africa, men at the front were prone to ignore transmittal of negative information to their commanding officers unless ordered to report in a specific manner. Positive information, as a general rule, was transmitted upon receipt, and negative information at predesignated intervals.

Through two field expedients, improvement was made in the effectiveness against aircraft of the .50 caliber machine gun mounted on the M2 half-track skate mount. In one case, a lateral extension, built inward from the skate mount, allowed a greater field of vertical fire. In another case, the regulation ammunition box, which holds only 50 shells and is fastened to the feed pawl pin, broke off during cross country travel and was replaced by a strap-iron basket holding 100 rounds. The original issue box on the gun had been the cause of many failures to feed.

A few minor adjustments greatly increased the stowage capacity of jeeps. If the entire rear seat, including the frame is removed, the metal liner of a .50 caliber ammunition box can be stowed in this space to increase the ammunition carrying capacity of the vehicle. Men's packs, placed on top of the box provide an expedient seat. Bolts and straps can be fastened to the front fenders so as to hold additional packs on the fenders.

In Africa it was learned early in battle that the Germans seldom fire at jeeps. The enemy has a high regard for the tough little vehicles and prefers to capture them undamaged, if possible.

As for half-tracks, those jack-of-all-trades vehicles, the Germans always fire upon them, for as a Nazi prisoner put it, "We never know what to expect on a half-track—a .30 caliber machine gun or a 105mm. howitzer—so we take no chances and fire on all of 'em."

A final warning to young officers subject to call for overseas duty might be summed up as follows: "Get all you possibly can out of your training in the United States. See that your noncoms give you more than lip service. Demand that they know their jobs and determine as nearly as possible if they will be capable of handling men while under fire.

"Fighting today breaks down into small groups, and only the thoroughly trained soldiers led by quick-thinking NCO's come through front-line action in physical and mental condition to assume their rightful place in civilian life once the fighting is finished."

Russian Summer Offensive*

THE whole of the Russian front remained completely quiet throughout the spring and the early part of the summer. The delay in the opening of the German attack was accounted for in part by: the uncertainty of the direction and weight of the next Allied blow after the unexpectedly rapid Axis collapse in Tunisia, the necessity for a period of rearming and retraining after the late winter operations, and the need for organizing and incorporating the new manpower collected in the recent comb-out of industry.

The German attack was finally launched in the first week of July, against the Russian salient west of Kursk. Thirty-eight divisions, including a high proportion (nearly half) of armored divisions, took part in it, and it took the usual form of a converging double drive against the northwestern and southwestern forces of the salient.

The northern drive against the forces between Orel and Kursk made no headway at all, and was broken off as soon as its complete failure was recognized.

The southern drive, aimed between Kursk and Belgorod, at first fared better, and a wedge about 25 miles deep was driven into the Russian lines, which for a time gave the Russian High Command cause for serious anxiety. However, the advancing enemy troops eventually came to a standstill in the heart of the Russian defenses, which were very deep and closely knit. Repeated counterstrokes at the flank and rear of the intruders finally forced them to relinquish most of their gains.

By July 17th, the Russians had regained all their lost positions, and it was clear that the long-expected German summer offensive in Russia had been everywhere completely repulsed.

The Germans, perhaps because of the general decline in the fighting efficiency of their infantry, perhaps because of the great confidence placed by them in their new heavy "Tiger" tanks and self-propelled guns (nicknamed by the Russians "Ferdinand"), reverted during this offensive to the old tactics which had served them so well in Poland and France, but which they had been compelled to abandon early in the first Russian campaign. In this Kursk battle a wedge of the new heavy tanks, followed by self-propelled guns, usually led the way. The second line was formed by motorized troops supported by infantry of the normal slower moving type. The former close coöperation of arms, of which every campaign of the present war has emphasized the paramount importance, was far less constant and effective than it had been in previous German offensives. This was one of the principal causes of the costly failure of the Kursk operations.

The new tanks and self-propelled guns did not come up to the high expectations placed on them and by no means proved invulnerable to the Russian antitank gun weapons. The whole affair showed that though there might be little noticeable deterioration in the fighting spirit of the German army, its efficiency and technical skill had definitely declined from its former high standard.

While the German attack at Kursk was still in progress, the Russians in their turn passed to the offensive farther north, and launched a three-fold blow against the salient in the enemy line covering the approaches to Orel. The axes of these three drives were the railways leading to the city from northeast, east and southeast, and the task before the Russians was formidable.

The defenses had been progressively built up during the twenty months that Orel had been in German hands, and comprised belt after belt of works, interconnected by numerous switch lines of defense to curtain off and contain any flank attacks. The Germans conducted, as is their custom, an active and resilient defense. They launched frequent counterblows to regain any lost ground, and their garrisons fought with stubborn and bitter persistence.

Nevertheless the Russians pressed steadily forward day by day. Their method was to nip off segments of the defenses one by one by means of encircling movements

The Tank (London).

Sovfoto.

These 70-ton "Ferdinand" tank destroyers (mounting 88mm gun) were captured on the Orel front. Armor runs from about 8 inches in front to 3 inches in rear. The "Ferdinand" has two 300 h.p. motors, makes about 12 m.p.h. on a highway, and carries a crew of six. It is steered by periscope; must stop to fire. Hole in side of right vehicle is observation post; plug sealing it is missing. Poor visibility for crew makes this new German weapon particularly vulnerable to attack by infantry.

cutting deep into the German front. The separate garrisons in the area thus isolated were then reduced by attacks from all sides.

Mobile forces, including tanks, motorized infantry and mobile artillery, working in close conjunction as a team, carried out the preliminary encirclement, and left the task of clearance to the troops of the normal type formations following closely behind them.

The most important of these local yet inter-dependent victories was the storming of the Bolkhov defended area, 35 miles north of Orel, which was the prelude to a menacing thrust southwestwards aimed at the Briansk-Orel railway, on which all the hostile troops in the salient depended as a line of supply and route of escape. From that moment, the Russian advances along the railways to the east and south of the city began to accelerate and close in, and though the bulk of the garrison of Orel probably made its escape before the net closed about it, the rearguards left to cover the withdrawal suffered severely, and the captures of arms and matériel, vehicles and stores by the victors attained large proportions.

The rapid and complete success of the Russian Orel operations received a fitting but somewhat unexpected supplement on August 5th by the capture of Belgorod, on the southwest of the Kursk salient. This was the result of a sudden coup de main, which took the Germans completely by surprise and overran their defenses before their reserves could arrive to meet the assault.

The Russian figures of German losses during this eventful month from July 5th to August 5th included 112,000 men killed or captured, 5,000 tanks, 2,300 guns, 11,000 motor vehicles, and 2,500 aircraft destroyed or taken.

The strategic gains were also of considerable importance. By the capture of Orel and Belgorod, the Russians came into possession of the great trunk line from Moscow to the Donetz basin along the whole length of 600 miles, and thereby gained much improved facilities of supply, and lateral transfer of troops and matériel for purposes of maneuver. The possibility of economizing forces—theoretically open to the enemy by the elimination of the Orel salient and the reduction of the length of this front by 100 miles—was probably more than counterbalanced by his heavy battle casualties, which on the basis of the Russian figures can hardly be put below 250,000 men—the equivalent of some 20 divisions at their present strength.

More important than these tangible results may prove to be the fact, made clear by these operations, *that the Russian army as a fighting machine is now superior to that of Germany*, even in the summer fighting in which hitherto the enemy has always been at his best. Russian aircraft are capable of wresting from the *Luftwaffe* local command on any selected battle zone. Russian artillery, which has always been better than its German counterpart, has still further improved its armament, its methods, and has now attained undisputed supremacy on the battlefield. The new medium-heavy Russian tanks are heavier and more formidable than the ponderous and clumsy "Tigers," which have failed to come up to the high hopes placed in them. Soviet antitank weapons, which include a number of the American-made Bazookas, have been considerably stiffened and are now highly effective. Russian generalship's staff work, too, is now fully up to, if not above, the best German standards, and quite equal to making the best use of the Red Army's superiority in numbers and armaments.

Sovfoto.

The newest type Russian KV tanks maneuver into position on the Orel-Belgorod front.

The victory of Stalingrad, great and epoch-making as it was, was primarily due to German over-confidence and errors which the Russians were able skilfully to exploit, and to the weakness of the Axis satelite formations left to hold vital areas on the flank of the German spearhead.

The victories of Kursk, Orel and Belgorod were gained in a stand-up fight between the two armies, able to employ all their available forces and resources on a fair field with no favor to either side. The triple Russian victory, clear-cut and complete, affords not only a criterion of the respective military efficiency of the two armies, but a happy augury for the future course and final result of the duel between them.

This Mark IV Special, captured on the Orel front in July, has the new "spaced armor" plates around sides of turret and sides so as to burst shell between outer layer and main armor. 75mm gun. Note attempt to dig tank in.

Sovfoto

German Armor from

This late type assault weapon has long high velocity 75mm gun with muzzle brake. Pictured here in recoil, the gun is longer than it appears. Slabs of armor have been fastened over sides of suspension as protection against AT rifles and grenades and to detonate shell.

Sovfoto

Mounted on a Mark IV chassis, this new assault gun is about 150mm. The tube is missing—only the outer jacket is left. Note remnants of side spaced armor and the ground hole in front where the crew apparently tried to dig in.

Sovfoto

This heavy bomber shown at the Moscow exhibition of trophies captured from the Germans, is a "Focke Wulf–200." Russia claims that the Axis lost 43,000 aircraft on the Soviet-German front during two years of war.

he Russian Front

Sovfoto

The fighter in the foreground is a Messerschmitt. Directly behind it is a Dornier 215 bomber.

The German 70-ton mobile artillery, nicknamed by the Russians the "Ferdinand," was designed to knock out Russian tanks during the 1943 summer campaign. This one was captured near Orel. (See description, Page 22.)

Sovfoto

Second Life of Rusa

The author, a former captain in the Russian Imperial Army, is an expert military analyst of Red Army tactics and matériel.

IT is a universally accepted idea in tactics that every tactical action, every combat, if analysed, is found to consist of three elements and three only: *fire, movement, and security.*

Mechanized warfare, however, with its tremendous use of matériel, on a scale ever increasing in volume and complexity, tends to create a fourth tactical element, the importance of which is becoming more and more obvious: *recovery*. The best tank commander can gain only an illusory, Pyrrhic victory if he confines his actions in battle only to hitting, moving and guarding. He has also to salvage. True, this problem always existed in warfare; but never had it such importance as it has acquired in mechanized warfare, which practically raises the act of recovery and salvage to the point of being a separate tactical function—although inextricably interwound with the other three elements.

One of the keenest Russian tacticians of the younger generation, Colonel P. Kolomitzev, expressed it well, when enumerating the main tactical principles in tank battles:

"In battles in which much matériel is used, the problem of evacuating and repairing is of primary importance. If evacuation is accomplished speedily, a large percentage of damaged machines can be repaired quickly and returned to active duty. In order to insure success in this field, in the final analysis, you, and not the enemy, must remain master of the battlefield on which the tanks have fought. Even when compelled to withdraw you should hold the field long enough to allow removal of all damaged tanks. Otherwise, the fighting strength of your tank units becomes rapidly exhausted."[1]

Early German Superiority of Tank Salvage In Africa

Numerous cases on record demonstrate the truth of this principle. In the practice of it, the German Army, apparently, had a lead on its opponents, which is only recently being overcome. The excellence and thoroughness of German methods of salvage and repair has been noted by many observers on Allied fronts. In his well informed and convincingly told accounts, Allan Moorehead, war correspondent of the London *Daily Express* who spent a year with the British Eighth Army, emphasized the important rôle played by German initial superiority in salvage and repair methods during the early setbacks of the British tank units in Libya.[2]

Describing the battle of November 18-19, 1941, at which he was present, Morehead writes: ". . . By six o'clock it was too dark to see any more, and one after another the guns hiccoughed into silence. Both sides drew off. Through the sharp cold of the night, the Nazi recovery units crept forward onto the battlefield. . . . Working at speed, they hitched up the partly damaged vehicles, both British and German, and dragged them off to repair shops. . . . The German losses were unknown because so many of their tanks had been salvaged in the night.

"This first day of battle then had revealed the two great disadvantages which were to handicap the British for the whole of this campaign and for many months to come. It was known on this first morning that all our tanks were outgunned and that regardless of how many vehicles the Germans had lost, they were going to get a far greater number back into action than we could because of their efficient recovery system. Their huge tracked and wheeled tank transporters were actually going into battle with the tanks themselves. Even while the fighting was still on, the men in the transporters were prepared to dash into the battle, hook into damaged vehicles and drag them out to a point where they could start repairs right away."

When the tide changed and the British swept forward, they were much impressed by the lavish equipment and the repair shops captured from the Germans at Gambut, within comparatively few miles behind the front line. "The tank workshops eclipsed anything we had in the forward area. Bedded in concrete and under canvas were big lathes and a heavy smithy. Cases of tank precision instruments worth many thousands of pounds lay about. One was full of periscopes. Several huge boxes contained new 50mm guns which apparently could be fitted to damaged tanks in this place. There were sheets of armor, new tracks and tires, a mass of woodwork and steel parts. It almost seemed that they could have built a tank here in the desert by the sea."

When the full story of the African campaign is written, it will be interesting to follow the gradual improvement and development of British methods of saving wounded tanks and returning them to the battlefield, and the influence it had on the performance of their mechanized units. Parallel to that we probably will be able to trace the gradual deterioration and collapse of German recovery. Here, as in many other in-

[1] The Cavalry Journal, page 58, November-December, 1942.

[2] Allan Moorehead, *Don't Blame the Generals*. Harper and Bros. New York and London, 1943.

san Tanks

by Nicholas Corotneff

stances, we shall probably find an additional proof of this strange aspect of the German tactics, which some observers fail to perceive. Their brilliant flexibility and versatility blossom out in "fair weather"—and shrink and stiffen under the chilly breath of defeat. British and Russian tactics showed the opposite tendency; adversity spurred them to development.

Early German Salvage in Russia

In the beginning of the war, the German superiority in retrieving damaged vehicles, and thus maintaining the fighting strength of their tank units, was naturally due to actual war experience, accumulated in their 1939-1940 campaigns. It was heavily enhanced by the fact that throughout the summer and fall of 1941, the constantly advancing German Armies usually had the possession of the battlefield after the engagement. The Russian losses in tanks, therefore, were exceedingly heavy—almost crippling.

The first reversal of form came with the German defeat at Moscow. Nothing better disproves the theory of the "strategical retreat according to plan" than the indisputable evidence of hundreds of tanks that littered the roads of German retreat. Under this first blow of adversity German salvage technique underwent an almost instantaneous collapse.

On the other hand, the bitter experience of these first months of reverses and retreats, showed the Russians the decisive importance of recovery and quick repair in mechanized warfare. Immediately, they set to work on improving their technique and devising new means and methods.

Combat Teamwork Needed in Salvage

As far as Russian mechanized forces are concerned, we have at least some material on hand, which enables us to form a general picture of the gradual development of Russian methods of tank salvage and repair. Although lacking details, it is still clear enough to show what far-reaching effects the improvement in these methods had on the operations of Russian mechanized formations in 1942, which culminated in the brilliant performance of I and II Guard Tank Corps during the Stalingrad encirclement and, later, of these and other units in the successful annihilation battles on the banks of the Don.

The general setup at the beginning of the war left the problems of salvage entirely to the tank units themselves. Then, the battlefield recovery, following the dominating tendency of modern tactics, gradually developed into a combat team operation, in which infantry, engineers, mortars and artillery assisted and

A Red Army maintenance crew at the battle front is working on the axle of a rear bogie on a 42-ton KV tank. Sovfoto.

protected tank and maintenance crews engaged in salvage.

Careless planning—or lack of planning—in carrying out recovery operations, often results in added tank casualties. Last winter, *Red Star* reported several examples, among them the following one:

"Several German tanks attacked a fortified position, held by the unit of Captain Soukhotin. The Soviet antitank riflemen opened fire and almost immediately disabled one of the attacking tanks. The rest turned back. In about fifteen minutes two tanks appeared, with the obvious intention of taking the disabled machine in tow. The antitank rifles again opened up. The German tanks, zigzagging all over the field, made several attempts with the result that one more tank was hit.

"Several hours later another attempt was made, this time in force. About ten tanks, with tommy gunners riding on top, led the attack. They were followed by infantry, strongly supported by mortar fire. The antitank riflemen, supported by machine guns and snipers went into action again. The engagement lasted about an hour, and the Germans succeeded in towing away one tank—but at the price of losing two more tanks and about 40 men killed and wounded.

"Another attack followed several hours later, in the last attempt to salvage the three machines. This time the Soviet unit, supported by reserves, counterattacked and finally captured the disabled tanks."

The mistake here was obvious. A strong artillery preparation directed against the antitank rifle nests would have greatly helped the recovery attempt.

Lack of teamwork—constant, closely knit coördination between all arms—nowadays always spells tactical failure. Even the most gallant and determined attempts by individual units fail in the long run, if they represent only disjointed and isolated attempts to reach a tactical solution which should be achieved by a concerted action of a combat team.

Development of Russian Salvage

In tracing the development of Russian methods of salvage and repair, no attempt is made herein to present a complete outline, as the information available at this time is insufficient. The general tendencies, however, and the new viewpoints developed in the last year or so are quite clear, and all Soviet reports put the emphasis on the same features.

The first clearly indicated trend is to place the advance units of maintenance battalions closer and closer to the battle line, whether in offense or defense. In the defensive battles of the summer and fall of 1942, just as in the following winter offensive, the supporting maintenance units, in the majority of cases, were located within approximately a mile from the combat units—sometimes within a thousand yards, and only in exceptional cases as far back as two to two-and-a-half miles.

The second important development is a greatly increased range of important repairs undertaken by the advance units—the tendency to transform them into real "field tank hospitals," able to perform complicated surgery on disabled machines in the immediate vicinity of the firing line. In the beginning of the war, the Russian viewpoint was identical to that expressed in Article 39 of *Armored Force Manual* FM 17-58, which states that "only the most minor repair operations will be undertaken in forward positions." In actual battle practice, the Russians have abandoned this idea. As a matter of fact, the trend now runs in the opposite direction. One of the most outstanding maintenance men in the Russian army, Colonel Bormotoff, who was in charge of field repairs in Stalingrad, summarized it as follows:

"The slogan of our maintenance units can be formulated thus: Only burned-out machines are to be sent to the rear shops. In all other cases, including the most seriously wounded tanks, repairs can and must be carried out on the spot."[3]

This statement is probably too far-reaching to be applied in an average case and rather reflects a successful experience of crack units, who proved to be pioneers in effecting complicated repairs in field conditions, but efforts are made to make this practice general.

New Techniques

Of the new techniques applied by forward maintenance units in repairing tanks, which in the early period of the war were invariably sent to the rear, the repair of wedged-in turrets seems to be one of the most frequently encountered. An actual description illustrates the procedure:

"A KV heavy tank, badly damaged by artillery fire, was towed to the collecting point. Two repair crews of the maintenance unit established the necessity of lifting up the wedged-in turret and repairing the transmission. For the latter job, it was necessary to take off the armor plates, get the gear shift out, and replace the clutch. The situation was such that evacuation to the rear was out of the question, and the order was given to start repairs right there, immediately after dark, and complete the job by dawn. One crew of three men worked on the turret; another one, simultaneously on the transmission. Using ordinary automobile jacks, the turret crew, after five hours of Herculean toil, succeeded in lifting the five-ton turret to the height of 250mm (10 inches). This clearance was large enough to take out the damaged separator-ring (on which the turret rotates) but was not sufficient to put in a new one. The repair crew decided to try a new expedient—to throw out the separator-ring altogether and add 50 ball bearings in its place. The scheme worked and the turret began to rotate easily.

"In the meantime, the second crew completed its work on the transmission and put the armor plates back. The whole job took eight hours. The tank was ready

[3] *Pravda* December 17, 1942.

before dawn and took part in a combat attack early in the morning."

Another important improvement concerns motor repairs. In the beginning, all tanks with disabled motors or motors needing general overhauling, were evacuated to the rear. Now, as a rule, the motor is taken out, a spare one put in its place, and the tank returns to the battlefield immediately. In the beginning, difficulties were experienced by field maintenance units in taking out the motors, especially in the case of heavy KV tanks. Last year, a machinist of one of the large tank factories, Gvosdeff, invented a special crane, called the "arrow crane," which greatly facilitates this procedure. The crane, described as being exceedingly simple in construction and operation, is fitted on top of the turret. It easily lifts the motor right out, and after the repairs are completed, puts it back. Apparently, all maintenance units are now using the invention.

Mobile Repair Shops

Considerable development has also taken place in the range of activities of repair and maintenance. These included battalions attached to army commands and so-called mobile repair bases of army and frontal commands.

Some of these mobile bases are completely motorized, some only partially so. They usually operate within 20-25 miles of the front line. In stabilized warfare, the repair equipment is installed in suitable buildings and specially constructed dugouts.

Conspicuously successful seem to be the so-called "repair trains" or "mobile railroad shops," introduced since the beginning of the war. This train is a miniature tank arsenal, installed in ordinary box cars, with a full assortment of lathes, a heavy smithy, and a power station. The train carries a set of special tents. Whenever conditions at the front are stabilized, a part of the equipment is detrained and installed on the ground. These trains, attached to army commands, operating within a few miles of the front line, are frequently under enemy fire. "Being completely self-supporting," states a Soviet account, "they often carry on for weeks, far away from populated centers, in the deserted steppes, on snow-bound, blizzard-swept plains."

The most valuable contribution that the mobile shops have made to the maintenance problems of Soviet tank forces is the ever-growing number of spare parts that they manufacture. This saves immensely valuable time in reconditioning tanks. At the same time, it relieves the great tank factories in the rear of a great deal of stress and allows them to concentrate on the production of new tanks. According to reports, some of the mobile bases have completely mastered the manufacture of over 200 different parts and details—sometimes "achieving, in field conditions, a production of spare parts and details which exceeds the pre-war output of large tank arsenals."

The results of these improvements in recovery and repair methods proved to be far reaching and constituted a most important factor in the greatly increased strength and incomparably better performance of Russian tank forces in the winter of 1942-43. The Soviet tank experts estimate that the life span, or as they say "the battle life," of their tanks increased over 100%. In the beginning of the war, this battle life was considered to be between 120 and 150 hours. Now the average is between 240 and 280 hours. Some "Methuselahs" reach a life span of over 300 hours. As one of their maintenance experts said, "The Russian tanks got a new lease on life as a result of better recovery, exploitation, and repair methods. They have two lives now and are on the way to getting a third one."

Dissemination of Experience

Perhaps one of the most interesting developments in the field of exploitation and repair of tanks is the Russian method of generalizing and standardizing the immensely valuable front experience—pooling the innumerable improvements in technique, minor inventions, short cuts and new skills developed by maintenance units, repair shops, individual technicians and mechanics, and then disseminating it through the whole army.

There is a great deal of evidence on hand to lead to the conclusion that probably no other army has achieved such results in a systematic, intensive study of battle experience, and in creating means and methods of making this cumulative experience available to the whole army. There is no doubt that this is one of the main factors in the constant improvement of Russian tactics since the beginning of the war.

The military press, a real syndicate comprising several hundred divisional and army newspapers, topped with the now world-famous *Red Star*, is, of course, one of the most powerful mediums of dissemination. Service magazines, of which there are ten or twelve, are kept constantly informed by the army commands of all new developments (except, of course, those of secret nature).

Tank Designs and Construction

There is a well-established liaison between the frontal commands and the tank constructors. The design and construction of tanks, as well as planes, is organized in Russia along unusual lines. The ordnance department is operated rather like a federation of separate construction bureaus, each one headed by a constructor of established reputation. Closely supervised and coordinated by the Ministry of Defense, which gives each bureau its assignments, they still seem to have a certain leeway, and assignments are given according to the proved capacities and inclinations of the constructor heading the bureau. The most noted of these constructors at the present time is Josef Kotin, the designer of the KV tank—the pride of the Russian army. A constant stream of information is pouring from the front to the construction bureaus, and frequent

trips to the front units are made by the members of their staff.

Tank Salvage Exhibition

A new method of collecting, standardizing and disseminating the huge amount of technical experience accumulated by the maintenance units, repair shops, and bases in the front line was inaugurated in Moscow last December. Under the guidance of a well known tank technician, General Sosenkov, an exhibition was held in the Polytechnical Museum, where all the new inventions, short cuts in production methods, and repairs were fully represented and illustrated. The exhibition was made into a real clearing house for everything new in salvage, exploitation, repair and production.

The exhibitors included the frontal commands, which demonstrated the achievements of their units, as well as the tank factories and repair shops of the rear. Although at this time the winter offensive was at its height, maintenance men and technicians of the front units, who distinguished themselves by inventing or working out new technical processes and procedures, were sent to Moscow to give explanatory talks and conferences during the exhibition. Army commands were instructed to send their representatives to study the collected material. Several Soviet accounts give us interesting details and highlights of which we can note the following:

To make a stronger visual impression, huge panoplies displayed the wornout, broken and damaged parts; and immediately next to them, the same parts restored and reconditioned. One panoply illustrated the new way of saving metal by converting the badly worn-out spare parts of large models into spare parts for tanks of the same design but of smaller size.

Another highly praised expedient, born of front line experience, which was prominently featured, was the so-called "grafting." A drive sprocket, for instance, badly torn by a shell, is repaired by having the damaged part cut out and the corresponding part of another damaged sprocket "grafted in."

This way of effecting quick repairs in field conditions, on more complicated parts, which are manufactured only by fully equipped tank factories, proved to be a great time and material saver. Naturally, it necessitated carrying an assortment of damaged parts, so that the "field surgeon" could have a wide enough choice for grafting operations, but the results seem to have been well worth while, and the parts repaired in this way were found to be as good as new.

Another expedient of the same kind is the "gear dentistry," when crowns made of a special alloy (sormite) are applied on the broken gear teeth. It is claimed that teeth thus repaired have an even longer life than new ones.

Gvosdeff's "arrow crane" was also exhibited, as well as a machine for automatic valve-grinding, new improved stands for assembling motors, etc.

The exhibition created a great deal of interest and elicited enthusiastic comments from officers and technical personnel of armored forces, who acknowledged the valuable aid and information which they received. Apparently, it is now planned to create a permanent "clearing house" of technical information along the same lines, not only for the armored forces but also for motorized units, and perhaps eventually for the whole motor industry. The beneficial results of such practical demonstrations seem to have been proved beyond doubt.

American officers and Russian seamen at the Moscow exhibition of trophies inspect re-built German tanks. The Russians claim that 42,400 tanks were lost by the Germans and their allies on the Soviet-German front in the course of the first two years of war. Sovfoto.

Tank Battle at Prokhorovka*

by Major K. O. Sukovsky, Red Army

THE battle fought at Prokhorovka in July, 1943, proved to be the turning point in the German offensive and Soviet counteroffensive in the Belgorod-Kursk direction. Just as in 1942 German shock troops that endeavored to break through to Stalingrad were routed on the Kotelnikovo battlefield, so at Prokhorovka, picked German panzer forces were stopped, then smashed and thrown back in their thrust toward Kursk.

This was not the first time that the area around the railway station of Prokhorovka had served as an arena for severe fighting and serious German defeat. There, during the first winter campaign in 1941, Russian tanks and artillery surrounded two German infantry regiments. Again last winter in the Prokhorovka-Byelenikhino triangle, as the result of a successful pincer movement, Soviet tank forces and motorized rifle troops annihilated a counterattacking group of German mobile troops. During the German counteroffensive this last spring, German tanks sent against Prokhorovka were pressed back to Belgorod Heights. Again in July, the Prokhorovka battlefield became the scene of important events but on an even larger scale. (See map, Page 32.)

During the early part of the fighting at Prokhorovka the situation was as follows: Having lost hope of a break-through along the Belgorod-Oboyan highway, the Germans began to regroup their tank forces and bring them up to the right side angle of the wedge. Their purpose was to launch a thrust northeastward in the direction of Prokhorovka. Then, extending this thrust further along the railroad, they hoped to pierce the entire depth of the Soviet defenses and accomplish what had failed on the highway—namely, make a break-through toward Kursk, or even east of Kursk.

Meanwhile, fighting was in progress southwest and southeast of Prokhorovka. In the southwest, Soviet tank forces, in flanking counterattacks, localized the German attempt to widen the wedge; whereas in the southeast, the Germans launched an auxiliary thrust in an effort to join with their main body. This presented a peculiar situation. On two sides of the Prokhorovka-Byelenikhino triangle active engagements were in progress, while a decisive state of the operation was coming to a head in the area of Prokhorovka itself. There, at the base of the triangle, German tanks were going to strike massed blows from two sides. A Soviet tank formation was sent to parry the enemy attack in this area. Its mission was to counterattack the German main group and paralyze its activity by determined action on the right flank.

A small stream separating the antagonists, at first glance did not appear to be an obstacle, but reconnaissance revealed that the rugged woodland terrain along its banks was extremely inconvenient for tank action and in places was entirely inaccessible to tanks. To attack the enemy from this side would jeopardize the advantage of surprise and swift action. Tanks impeded in maneuvering were liable to sustain losses without achieving success. Greater advantages were offered by the section between the railroad and the other stream flowing parallel to it. Wide fields with small gently sloping declivities, gullies and groves provided tanks the necessary space and freedom for maneuvering during the course of attack. Soviet tanks, therefore, took up initial positions in the area of Prokhorovka.

At the same time, events that were to determine the nature and progress of the impending battle were also taking place on the enemy's side. The German command, apparently guided by the same desire to avoid a position unfavorable for tanks, sent its panzer divisions to the same section near Prokhorovka. Coincidence occurred not only in the place selected but also in the time. These two avalanches of tanks simultaneously headed toward each other and met at close quarters only three kilometers from Prokhorovka, where near the state farm of "Komsomoletz" there followed one of the biggest tank battles of this year.

The appearance of Soviet tanks on the battlefield took the enemy by surprise. Their secret advance *during the night* and their skilful regrouping while taking up initial positions had escaped the enemy's notice. The enemy had been confident that he would have to deal only with Soviet infantry and artillery, and had not expected to encounter the large tank forces.

From the very beginning of the battle, the Germans betrayed indecision and yielded initiative to Soviet troops. The first echelon of attacking Soviet tanks crashed at full speed into the battle formations of the German tank column. Ranks became confused, and at close quarters the German heavy tanks, deprived of the advantage of their armament, were fired on at almost pointblank range by Soviet T-34 tanks. The attack was so swift that the first rows of Soviet tanks penetrated the entire enemy formation and reached the tail end of the enemy column.

The extensive field proved too small for such a vast mass of fighting tanks. The German force, consisting of shock troops—divisions belonging to the SS Panzer Corps—comprised about 400 heavy, medium and light tanks, accompanied by large numbers of self-propelled guns. During the battle, which continued until late evening, heavy turrets were shot off of many of the German tanks, and shells pierced holes in the armor of many others. More than a hundred enemy tanks and self-propelled guns burned on the battlefield.

In the counterthrust against the panzer divisions,

*By wireless from the Military Department Press, U.S.S.R., Moscow.

the Soviet tankmen gained a great victory. The spearhead of the enemy's tank wedge, which cracked in the area of the Oboyan highway, was definitely broken at Prokhorovka, whence the Germans had expected to make a leap toward Kursk. The battlefield remained a No Man's Land, and for several days afterward was littered with black scorched skeletons of tanks.

Meanwhile, on a neighboring sector somewhat to the right of the tank battle, during a similarly fierce battle fought by the infantry, a Soviet rifle formation counterattacked the enemy and stopped him on a river west of Prokhorovka.

The same day (July 12th) Soviet troops at the village of Rzhaveta, southeast of Prokhorovka, met another German tank column en route to join the main forces. The fighting which ensued at this point was characteristic of the successful countermaneuver effected by Soviet antitank, field artillery, and flanking counterattack accomplished by the tanks. The enemy attacked the center of the defense positions, where over ten batteries were concentrated. By a powerful fire barrage, the massed attack of enemy tanks was repulsed with heavy losses to them. The enemy then fell back to his initial positions and re-formed, but did not repeat the assault against the center. Instead, by massing in gullies, he tried the neighboring village.

All batteries then transferred their firing positions from the center to the flank. Such a countermaneuver, involving all available artillery, necessitated a considerable risk. Had the enemy detected it, he might have either anticipated it by an assault or else shifted his forces from the center. A further risk was involved in moving the guns under the observation and attack of enemy aviation, but the calculations of the Soviet command proved to be correct.

Skilfully accomplishing the maneuver, the batteries, which had taken up previously prepared positions by the time that the Germans launched a thrust against their flank, now again repelled the enemy. The German attempts to find the junction points between the units and break through simultaneously on both flanks were likewise thwarted by the countermaneuver of the artillery. The batteries maneuvered their fire and made dashes along the front to meet the German tanks.

A crucial moment of the battle occurred when the Germans, after their aviation had managed to silence one section of the Soviet artillery, drove a wedge into Soviet defenses with a large group of their tanks. The commander of the Soviet tank regiment was then ordered to assail the exposed enemy flank and restore the *status quo*. In this unequal engagement, the regiment sustained heavy losses but stopped the advance of the enemy column and filled the gap.

Fighting on Prokhorovka field and near the village of Rzhaveta represented the last stage of the German offensive in the Belgorod-Kursk direction. The worn down enemy was compelled to give up his concentric attacks towards Prokhorovka and go on the defensive. But fighting on the Prokhorovka battlefield did not end there. Several days later, fighting was resumed—this time on the initiative of the Soviet troops which launched a counteroffensive in the area of Prokhorovka and west.

The Germans entrenched themselves on a line formed by Prokhorovka Heights and in strong points on both sides of the railroad. At two points they were somewhat wedged into the front line. Soviet tank and rifle troops which attacked from the right cut off both salients, and by flanking counterattacks that captured key positions, broke down the resistance of the German troops.

Fighting for the heights southwest of Prokhorovka was most stubborn. The Germans had brought up a large number of artillery and trench mortar batteries and had managed to set up in this area a system of cooperating fire centers. Roads and gullies were mined. German infantry made use of old trenches as well as

new ones and reinforced them with a network of blindages equipped with machine gun nests. The Germans located their batteries on the back slopes and crests of hills, with a view for both frontal and flanking fire.

The main issue of this important counteroffensive was decided by Soviet tanks acting in coöperation with aviation in breaching the battle formations of the German infantry and reaching the area of the artillery positions. German antitank centers were crushed largely by Soviet artillery fire. At a section west of Prokhorovka a rifle formation broke through the German defenses on the river line and, by vigorously pressing their success, advanced southward. The enemy's strong points to the left of the railroad were attacked by other rifle troops. As a result, the German forces, hard pressed in the triangle, were compelled to fall back southward to Belgorod.

Picked German panzer troops and infantry suffered severe defeat in the fighting on the Prokhorovka battlefield, where the superiority of Soviet maneuver tactics was fully manifested. This battlefield will go down in history as the scene of large scale engagements that determined the failure of the entire German 1943 offensive.

Artillery Support of Cavalry and Motorized Infantry at Stalingrad

IN surprise blows dealt the Germans in the Stalingrad area, an important part was played by the Soviet mobile troops—cavalry and motorized infantry. Some of these units made fighting raids of 200 and 300 kilometers in the enemy's rear and achieved important victories, in which they suffered quite inconsiderable losses.

Cavalry and motorized infantry, supported by artillery, went into action after the enemy's defenses had been pierced.

During the months preceding the Red Army offensive, the Germans at Stalingrad had succeeded in erecting very solid defenses. They had created a wide network of strongpoints, a large number of pillboxes, blockhouses, dugouts, deep intrenchments, and barbed-wire entanglements. All of these were shattered by the Soviet artillery at the very beginning of the offensive. After the enemy's defenses had been pierced, activity of the artillery increased and continued to operate as the infantry carried the fight into the enemy's positions.

The most responsible task of all was that of the guns escorting cavalry and motorized raiding parties. The movement of the Soviet mobile troops was swift and vigorous, but the artillery kept pace with them. The raid was begun by the artillery units commanded by Lieutenant Colonel Sergeyev. Their traction machines were thoroughly overhauled and brought into good shape, with the result that, as never before in all of these long marches, not a single machine was let out because of breakdowns. The artillery units did not lag behind the formation to which they were assigned. During the raids, they acted in close coördination with the cavalry and motorized troops. Because of good liaison work, the artillery commanders were kept well informed about all changes in the situation and were able at once to give artillery a good support when it was needed.

Near one of the villages the enemy rendered stubborn resistance to the Soviet cavalry formations. It was essential to neutralize enemy fire nests without delay. Major Kotelovsky advanced his regiment into an open space, deployed it in battle order, and commanded the guns' fire over open sights. This powerful artillery attack came as a surprise to the enemy. His fire nests were destroyed, and the Soviet cavalry was able to advance.

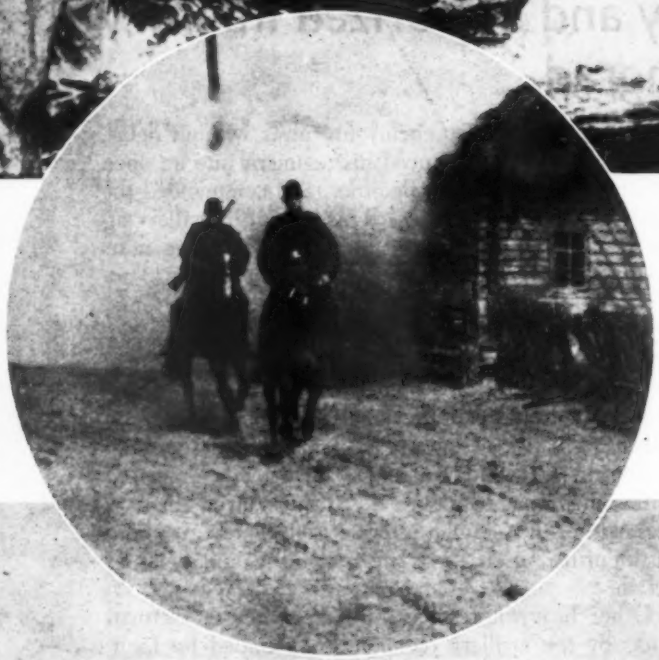
The Soviet troops launched a sudden attack on the enemy airdrome. Major Kotelovsky's guns opened fire at the enemy's fortified points, while the cavalry completed the rout, captured the airdrome and several dozens of planes.

During this raid Kotelovsky's regiment destroyed tanks, motor vehicles, fire nests, and forced about a regiment of the German infantry to flee. The regiment distinguished itself by a great mobility and vigor of action.

Other heavy losses were inflicted on the German tanks by the artillery regiment commanded by Lieutenant Colonel Zybkov. Endeavoring to stop the Soviet advance, the enemy hurled two groups of tanks into a counterattack. Zybkov's guns deployed straight from the marsh and opened fire. One enemy tank after another was put out of action, and the counterattack collapsed. Several dozens of damaged and shattered tanks were left on the battlefield.

The artillery coöperated with raiding units in a consolidating capture of inhabited places. Often enough the Soviet troops had organized an all-round defense task of the artillery and in such cases kept the enemy points of concentration and lines of approaches under fire. No less important was the part taken in the repulsing of the enemy's counterattacks and combating his antitank weapons. In a number of battles supporting guns followed in the wake of the Soviet tanks and opened fire as soon as the enemy's antitank guns betrayed themselves.

One regiment alone commanded by Lieutenant Colonel Sergeyev destroyed 16 German antitank guns.



It is said that German occupation troops in Norway are busy with exercises on how to transport horses. Above, German Army horses are shown entering flat-bottomed transport boats.

At left, soldiers of a German shock troop of cavalry leave a burning Soviet village. German caption claims that the village had been a guerrilla stronghold.

Below, horses, bought (or stolen) from Russian peasants, are transported to the German lines.

Press Assn. Photos

Horses in the German Army

General Hawkins' Notes

Evaluation of Armor

MODERN mechanical equipment for the army is becoming an amazing, almost bewildering thing. American ingenuity, stimulated anew by U. S. entrance into this war, has caused the creation and production of astonishing mechanical devices.

Some of these devices are in the form of weapons such as the new cannon for field artillery, the antitank guns of various sizes and different principles for their application, and the antiaircraft guns. Other devices apply to transportation of all kinds—both for men and for supplies; others to communications.

It is difficult to say which of these new devices has had the greatest effect in the modification of tactics. For a time, the transportation of men and weapons in armored vehicles had the greatest effect, and this effect was increased by improved forms of radio communications. To a considerable extent, however, these devices have neutralized each other. For example, the new types of antitank guns and tank destroyer weapons have neutralized, partially at least, the great power developed in 1939 and 1940 by the armored combat vehicles.

There is a profound truth in all that. It is that new mechanical means of warfare seem overpowering and wonderful until other mechanical means are devised to oppose them. This does not mean that we can do without these new mechanical developments for either offensive or defensive operations. An army without them is seriously handicapped. It does mean, that since one device checks another, we must continue to study, develop, and use the tactical principles that have been proved throughout the history of warfare.

One of these principles is that *tactical success comes from the combined use of all arms and services under a unified command,* and not by too much reliance on any one branch or separate element, however new or old it may be.

To be useful, a weapon or a form of transportation or branch of the service must be such that it furnishes the best means of accomplishing certain necessary tasks. This does not exclude old weapons or any old means of defeating the enemy simply because they are old.

Another old and proved principle is that the *separate forces or units which have different tasks in a tactical operation must be kept within supporting distance of each other.*

There are, of course, other old and tried principles for tactical success, but particular reference is made here to the two just mentioned.

In the years 1939 and 1940, the Germans were able to violate these principles in their application of the *blitz.* Their armored divisions hurled themselves through the gaps created by other troops, or by themselves, and exploited the break-through by attacking hostile reserves or reaching vital strategic areas without waiting for the support of any other troops. Running wild through hostile communications and headquarters posts, they created terror, confusion and utter demoralization in the rear of the hostile front lines. Their mechanical devices for attack were, at that time, unopposed by any devices for defense. The necessity for careful combined action of all branches of an army, in accordance with the first principle, did not exist.

The armored forces were invincible. The Allies had not only failed to equip themselves with mechanized devices of defense against armored vehicles, but had suppressed the maintenance of the only old branch in their services able to cope with the enemy in cross-country mobility—the cavalry. The Allied ground forces had no coördinated support from their air forces until the evacuation at Dunkirk.

During the conquest of Poland, Norway, and the Low Countries, the German armored forces, supported closely by their air forces, had no need for cavalry and ran no danger from their failure to observe the second principle mentioned above—that of keeping task forces within supporting distance of each other.

When the Germans attacked Russia in 1941, however, they found it necessary to modify their tactics. They could no longer apply the *blitz* as they had done in France. The Russians were too numerous and fought too stubbornly. Furthermore, the Russians had learned the lessons of 1940. They had begun to equip themselves with antitank guns, although they had not had time to produce enough of them. They had trained their artillery to oppose tanks; they had increased their own armored forces; and they had maintained large forces of cavalry. The Germans, therefore, had to be more cautious and were quick to resume the application of the two principles we are discussing.

The blitz was modified into the famous "wedge and kessel." The *wedge,* formed of armored forces backed up by deep columns of infantry, broke through the

Russia proves that mechanical devices do not change the most important principles of war.

Russian's lines and then turned to the right or left on a wide arc, and, doubling back upon their own lines, encircled and enclosed great masses of Russian troops. But it was found necessary to support the armored forces very closely with infantry. The motorized infantry belonging to the panzer divisions was not enough. Marching infantry in great numbers was called upon to follow closely after the panzer divisions in the *wedge*. This made it necessary for foot troops to march 30 to 35 miles per day in order to keep up.

It was here that the Germans should have realized the great mistake they had made in suppressing most of their cavalry. Modern cavalry would have had no difficulty in keeping up with the panzer divisions and would have formed a vital link between the armored divisions and the slower moving infantry.

A recent proof of the ability of modern cavalry to operate with tanks was demonstrated by the Russians in their defeat of the Germans at Taganrog. There, tanks formed the spearhead of advance, and cavalry instead of infantry was rushed into the breach to exploit the success. See Page 2, this issue.)

Following brilliant successes made early in the campaign, the "wedge and kessel" plan of tactics began to break down. This was due largely to the fact that the Germans had no large forces of cavalry. Their cavalry had become *"the missing link."*

It became difficult to protect the flanks of German troops employed within these wedges. The Russians began using defensive formations of great depth. Thus, the deeper the wedges thrust themselves through the Russian lines, the more bitterly they were opposed. The bottom or base of a wedge would be attacked by Russian armored troops combined with cavalry and followed by infantry. The campaign slowed down, the winter of 1941-42 followed, and the Germans were stopped.

When the spring and summer campaign of 1942 opened up, the Russians were better equipped with antitank weapons organized into units, and with armored forces and increased numbers of cavalry. In a desperate mood, the Germans hurled themselves forward, without regard for losses or for protection of their lines of communication. The Russians backed away and the Germans reached Stalingrad and the Caucasus by concentrating their power on the southern areas of the far flung battlefield. By this time the German lines of communication, under harassing attacks by Russian guerrillas and cavalry, began to falter in their tasks of supply, which grew increasingly difficult as the tenacity of the Russian defense prevented the fall of Stalingrad. In the Caucasus, the German advances eventually came to a halt.

Finally, it became the Russians' turn to take the offensive. They attacked the German army in front of Stalingrad. Great flank attacks and encircling movements around both flanks (led by armored troops supported by cavalry and followed by infantry) trapped the Germans in a vise that resulted in their surrender.

The decision of the German army leaders to diminish their cavalry forces in this war, and to rely so much upon mechanical means of transportation and combat, has proved fatal; whereas, the part played by the Russian cavalry in all these operations, and particularly in the successful operations of 1943, has been of great importance. The Russians, while taking every advantage of mechanical combat vehicles and new devices in guns, transportation, and communication, have also retained and used the old and tried branches of the service, and in so doing have gained a decided and permanent ascendancy over the German armies in Russia. In other words, the Russians have adhered to the two principles selected for this discussion as the two most important tactical principles in war. It would be well for the British and Americans to do likewise.

Many persons have wondered about the success of the Russians in defeating and driving back the great invading German armies. This success cannot be ascribed to any one thing. It was due to a combination of several things, but the possession of large forces of cavalry and its proper use is one of the important reasons. The failure to establish, maintain, and use large cavalry forces has cost armies dearly in the past and up to the present war.

The reasons for the Russian success and the German defeat can be stated briefly as follows.

1st. *The stubborn fighting spirit of the Russian soldiers.* They preferred to die rather than surrender. This delayed the German advances and caused them great casualties even in victory. Many victories became Pyrrhic.

2d. *The Russian adherence to all tried tactical principles and their ability to apply them in a flexible manner.* When a tactical operation failed, they were not upset and demoralized, but relied upon the resource and initiative of the leaders on the spot to make the best of the situation.

The Germans, in contrast, had written some new and untried principles into their books to fit into their new ideas of mechanized warfare. They relied upon these to bring them a quick victory in a short war against unprepared and ill equipped enemies.

Premier Stalin has written, "The Germans apply their tactics in accordance with textbooks and endeavor to fit events at the front into paragraphs of their regulations. The Germans are accurate and exact in their operations when the situation allows the requirements of their regulations to be carried out. This is where their strength lies.

"The Germans become helpless when the situation gets complicated and does not correspond with this or that paragraph in their regulations but requires adoption of an independent decision not provided for in the regulations. It is here that their main weakness lies."

3rd. *With their new ideas of mechanized warfare, the Germans thought that they could do without large forces of cavalry.* They did very well in Poland and

France when their enemies were unprepared to oppose mechanized force. As soon as they met enemies who had made some preparation to meet the armored divisions, the need for cavalry became very great.

In contrast to the mistake of the Germans in regard to cavalry, the Russians have maintained and used many divisions of cavalry throughout the war to date.

4th. *The strategic operations of the Russians in falling back into the depths of their vast country and gaining time to mobilize, equip and train their great manpower.* This operation was made possible by the tactical operations of their armies in fighting delaying actions over a period of nearly two years. This strategic plan also brought about the Pyrrhic victories gained by the Germans and the over-extension of their lines of supply.

5th. *The unpreparedness of the Germans for coping with the severe Russian winters and the ability of the Russians to use those winters to carry out harassing operations.*

6th. *Close coöperation between air and ground forces.* In accordance with the principle of employing all means of warfare in close coöperation with each other, the Russians have used their increasing airforce in close coöperation with their ground troops, and as one branch of their army organization rather than as an independent force.

As should be apparent without question, however ingenious, amazing and astonishing our modern mechanical devices may be, there are certain old principles of warfare and certain old branches of the army—cavalry, infantry, artillery, etc.—that must be maintained. They must be modern, but they must also retain their principal characteristics, if we wish to win in modern warfare.

Change in Breden March Formula

FOR those accustomed to using the Breden March Formula, the change from the 9 mile to the 8 mile trot, as prescribed in C2 to FM 2-15, merely simplifies its figures and its use. For those not previously accustomed to its use, it gives an accurate and easily determined way of figuring how to get somewhere on a horse on time, without memorizing a lot of march data.

The Formula:

15 times rate (or distance) less the marching time in minutes equals the minutes of trot, or simply $x = 15R - t$

Example 1. It is desired to cover 5 miles in the first hour of a march, marching 45 minutes and halting 15.

Solution: $15 \times 5 - 45 = 30$ minutes trot

Example 2. It is desired to reach an initial point 3 miles distant in 35 minutes.

Solution: $15 \times 3 - 35 = 10$ minutes trot.

Example 3. It is desired to march 24 miles in 4 hours, halting 15 minutes the first hour and 5 minutes thereafter.

Solution: $15 \times 24 - 210 = 150$ minutes trot

$210 - 150 = 60$ minutes.

Ratio $= \frac{150}{60}$ or 5 minutes trot to each 2 minutes of walk.

The original formula, based on the nine mile trot, was derived from an article in THE CAVALRY JOURNAL in 1936. General Wainwright directed that it be taught at The Cavalry School. It has also been included in the instructional data in FM 2-15 (par. 187, (7), dated April 8, 1941).

For those interested, its mathematical accuracy is demonstrated as follows:

The Derivation:

Let $x =$ minutes of trotting time in march period.

$y =$ minutes of walk.

$R =$ rate of march in miles per hour.

$t =$ march period in minutes.

$$\frac{4 \times 5280}{60}$$

The walk $= 4$ miles per hour $= 4 \times \frac{5280}{60} = 352$ feet/min.

The trot $= 8$ miles per hour $= 704$ feet per minute.

$704x + 352y = 5280\,R$
$x + y = t$ } Relationship Equations.

Solving: $x = 15\,R - t$

For anyone desiring to substitute any other rate of march, for either the walk or the trot, it is simply necessary to change the figures in the Relationship Equations above and solve. The 2nd Cavalry Division has been using the 6½ mile trot, in which case the formula becomes $x = 24\,R - 8/5\,t$.

The Gallop Formula:

C2 of FM 2-15, referred to above, says "The gallop is used only under exceptional circumstances or when required by the tactical situation." Under those circumstances, it is a good thing to have something usable at your finger tips—one that resembles the trot formula.

Formula: $z = 10\,R - t$

Minutes of gallop $= 10$ times rate (or distance) less marching time. The remaining time to be equally divided between walk and trot.

Example: It is necessary that you march 5 miles in 30 minutes. How can you do it?

Solution: $z = 10 \times 5 - 30 = 20$ minutes gallop, 5 minutes trot, 5 minutes walk.

This formula is based on 12 mile gallop, 8 mile trot, and 4 mile walk.

HEADQUARTERS

ARMY GROUND FORCES

OFFICE OF THE COMMANDING GENERAL

ARMY WAR COLLEGE

WASHINGTON, D. C.

To the Officers and Enlisted Men
of the Army Ground Forces:

Our third War-Christmas is here. Our first one plunged us into a grim defensive battle on all fronts. With our meager shipping we rushed our partly trained troops here and there in a desperate effort to close the gaps as best we could. We hung on. German submarines were sinking our ships within sight of our Atlantic Coast.

Our second War-Christmas found us invading Africa and striking back in New Guinea and Guadalcanal. We had the measure of the Japanese Navy, but German submarines still were inflicting heavy losses on Allied shipping. The worm was beginning to turn, but not too fast nor too fully.

This Christmas we really have much to cheer us. We are conducting successful naval operations in both the Atlantic and the Pacific. We have the mightiest battle fleet ever known, and it is growing. Military operations are in progress in nine theaters all over the world. Africa is rid of the enemy. We can strike on land and sea wherever we elect. We have the initiative. The enemy is on the defensive everywhere. Our superiority is becoming more decisive month by month. One-third of our army is overseas, and shipments are being speeded. Victory may not be in sight, but it is certain.

The soldier's Christmas during war perhaps cannot be too merry in the usual sense, but everyone can be proud of America's war effort, and proud of being a fighter in the biggest and finest Army we have ever had.

I have watched our war Army in training for over three years. My admiration for the American soldier increases all the time. I believe in him, and am certain that, led properly, he is invincible in battle.

My best wishes to you all, and my gratitude for your devotion and fine accomplishments.

L. J. McNair

L. J. McNAIR,
Lieutenant General, U.S.A.
Commanding.

Editorial Comment

Faith In God—A Powerful Weapon

Once again time ticks its way through the Christmas season and into the dawn of a new year. Two years have now passed since the attack at Pearl Harbor—two years of valiant effort—two years of almost miraculous accomplishment by a nation banded together in a national faith in God to defend the liberties that are American tradition.

The work of these two years has been an uphill fight and the end is not yet in sight. Although the military situation is far different from that of two years ago and eventual victory now seems assured, a terrific struggle still lies ahead for the coming year. Our enemies are not yet beaten. To make certain that they will be, it is necessary that both the national effort and national faith constantly be renewed and ever strengthened.

There are many reasons that have brought this nation steadily out of the perilous odds of two years ago and to the cumulatively powerful position of the present. Not the least of those reasons is the national faith in God —faith in the destiny of America—faith in the principles of each man's right to "life, liberty and the pursuit of happiness." Faith is one of the nation's most powerful weapons—a weapon which cannot be captured by the enemy—and must never be lost even when everything else seems gone.

To those on the battle fronts—at home or overseas—THE CAVALRY JOURNAL once more sends its Christmas and New Year's Greetings:

May we never lose faith in God or country. It is that faith which will speed us to a righteous victory so that once again a war-torn world can return to "Peace on earth, goodwill toward men."

* * *

Cavalry Journal Policy and Red Army Strategy

From the early fall and winter of 1941—while even military men contended that "Russia could not possibly hold out" against the German Army—The CAVALRY JOURNAL has consistently extolled the fighting power and sound strategy of the Red Army, which from the beginning employed large masses of cavalry in *coördination with other arms.*

In June, 1942, The CAVALRY JOURNAL cabled the War Department, U.S.S.R., Moscow, and requested an authoritative article on the Russian employment of cavalry and its value in modern war. The War Department responded promptly by cabling an article by Colonel General Gorodovikov, in charge of training cavalry reserves. This article, published in the July-August, 1942, issue was the first of many Russian articles on the employment, not only of cavalry, but of tanks, motorized infantry, artillery, maintenance crews, and other arms and services.

CAVALRY JOURNAL policy regarding the Red Army was not a mere happenstance. It was based on a careful analysis of early Russian victories. As pointed out by General Hawkins in his Notes in this issue, the leaders of Russia's armies, unlike many modern extremists, did not overlook certain fundamental principles of warfare, but ably coördinated and employed both *old and new arms* in the application of *sound well-tested principles.*

During the days of the Red Army's withdrawal, Russian cavalry frequently operated behind the enemy lines—interrupted supplies and communications, harassed reserves, and destroyed staff headquarters. The cavalry struck quick, sharp, devastating blows; then quickly withdrew and melted into the forests and countryside. It was in this manner that General Dovator's cavalry fought in the defense of Moscow in 1941. His surprise thrusts were so penetrating and disastrous that the German command credited him with having 300,000 men. The Red Army later announced his command as 3,000.

The first employment of cavalry in a strategic rôle in modern war occurred at the first battle of Rostov, which was won on November 28, 1941—nine days before Pearl Harbor. That was also the first defeat of a Nazi army in Russia. A cavalry force dispatched by Colonel General Cherevichenko to the flank of General von Kleyst's crack First Armored Tank Army caused a complete rout of the German force comprising three tank and one mechanized division.

A few days later, December 6th, the Third Guards Cavalry Corps under General Kryuchenkin, accomplished the first great double envelopment of Nazi forces on the Russian Front. By joining another cavalry pincer under Colonel Kuliev, they surrounded three German infantry divisions (the 45th, 95th, and 134th) which were striking toward Moscow from the Central Front.

The following day, between Stalingorsk and Venyev on the approach to Moscow, the First Guards Cavalry Corps under General Belov struck at the foundation of another German wedge aimed at the Soviet capital and reportedly "wiped out" three divisions of General Guderian's Second Armored Tank Army.

These successes, which followed quickly one upon the other, first turned the German tide of conquest and, as early as November and December of 1941, presented the pattern for victory recently employed in the great Soviet offensive of 1943.

The earlier Russian offensive suffered reverses in the spring and summer of 1942, but from a study of recent

Russian successes it appears logical that those reverses were due more to the difficulties of production and the consequent shortage of matériel than to faulty strategy or tactics.

Beginning with the Battle of Stalingrad, the Red Army has had an astounding series of victories that have pushed the Nazis back from the Volga to the borders of Poland. Of particular interest to The CAVALRY JOURNAL is the definite pattern that appears to run throughout—great double envelopments by large forces of cavalry and tanks in coördinated attack.

In the Battle of Stalingrad, where the German Sixth Army was completely encircled and annihilated, two pincers—one from the north, one from the south—met at Kolock on the bend of the Don. Early reports indicated that the southern pincer comprised a tank corps and a guards cavalry corps; and the northern pincer, a tank corps. Later reports confirm that both pincers were spearheaded by tanks, and the breakthroughs exploited by cavalry. This same strategic pattern was employed more recently at Taganrog and in the battles of the Nogaisk Steppes and the Dneiper Estuary. (See articles, this issue.)

Even as The CAVALRY JOURNAL goes to press, new victories, following the now familiar pattern, are reported:

"London, November 13 (AP). The Russians, throwing their cavalry into their semicircular offensive from Kiev yesterday, reached to within 15 miles of the rail junction of Zhitomir and captured 100 towns as they steadily pushed the Nazis nearer to the prewar Polish border. The early morning communiqué broadcast by Moscow said cavalry was used to by-pass and surprise the Germans as the Russians captured Korostyshev on the main road from captured Kiev to the rail junction objective of Zhitomir."

"London, November 15 (AP). The horse-plus-armor sweep of the Russians toward the Polish and Rumanian borders moved ahead with about the same speed that carried the Russians 85 miles from Kiev to Zhitomir in a week of steady fighting.

These successes of Red Army cavalry have proved that, far from having been displaced on the battlefield, the horse has risen to new and higher standards of value. Even the most skeptical military analyst must now admit that the employment of cavalry by the conquering armies has been fully justified.

The CAVALRY JOURNAL is proud of its unfaltering policy—proud of its steadfast and undiminishing faith in the ability of cavalry; its unbiased analysis of the means and methods of warfare, regardless of arm or army; and its early recognition of the strategic pattern of the Red Army, now culminating in the outstanding victories.

* * *

From the Text of the *Moscow Pact*

Statement signed by President Roosevelt, Prime Minister Churchill and Premier Stalin regarding atrocities.

"The United Kingdom, the United States and the Soviet Union have received from many quarters evidence of atrocities, massacres and coldblooded mass executions which are being perpetrated by Hitlerite forces in many of the countries they have overrun and from which they are now being steadily expelled. The brutalities of Nazi domination are no new thing. . . .

. "What is new is that many of these territories are now being redeemed by the advancing armies of the liberating powers and that in their desperation, the recoiling Hitlerites and Huns are redoubling their ruthless cruelties. . . .

—Drawing by William Gropper from "*Your Brother's Blood Cries Out.*"

"Accordingly, the aforesaid three Allied powers, speaking in the interests of the 32 United Nations, hereby solemnly declare and give full warning of their declaration as follows: At the time of granting of any armistice to any government which may be set up in Germany, those German officers and men and members of the Nazi Party who have been responsible for or have taken a consenting part in the above atrocities, massacres and executions will be sent back to the countries in which their abominable deeds were done in order that they may be judged and punished according to the laws of these liberated countries and of the free governments which will be erected therein.

"Lists will be compiled in all possible detail from all these countries, having regard especially to invaded parts of the Soviet Union, to Poland and Czechoslovakia, to Yugoslavia and Greece, including Crete and other islands, to Norway, Denmark, Netherlands, Belgium, Luxembourg, France, and Italy.

"Thus, Germans who take part in wholesale shootings of Polish officers or in the execution of French, Dutch, Belgian or Norwegian hostages or of Cretan peasants, or have shared in slaughters inflicted on the people of Poland or in territories of the Soviet Union which are now being swept clear of the enemy, will know *they will be brought back to the scene of their crimes and judged on the spot by the peoples whom they have outraged. . . .*"

LETTER FROM ITALY

"X" Replacement Battalion, Fifth Army

Editor, The Cavalry Journal **4 November 1943**
Washington, D. C.

Dear Sir:

In absence of a copy of The Cavalry Journal and having complete faith in your selection, I am inclosing a money order for ten dollars ($10) for which I would like as many books and pamphlets as possible on horsemanship and horsemastership.

We are training mounted units and are at a loss for material on riding and care of the horse. Tactical information is not necessary, because our horse units here in Italy are making their own tactics.

Ask General Hawkins to write some of his very helpful notes on horse reconnaissance in mountains for us. . . .

_____, 2nd Lt., Cavalry.

* * *

Annual Meeting

The annual meeting of the United States Cavalry Association will be held at the Army and Navy Club, Washington, D. C., at 8:00 P.M., Monday, January 24, 1944.

Formal notification, together with proxy cards, will be sent to all active members of the Association within the continental limits of the United States. All members are requested to execute and return proxy cards promptly to the Secretary, U. S. Cavalry Association, 1719 K Street, N.W., Washington, D. C.

Those officers stationed in the vicinity of Washington are urged to be present in person.

No Comment!

THE NEW YORK TIMES,

NEW TYPE U.S. CAVALRY IN ACTION AT SALERNO

Reconnaissance Troops Prove Valuable in Tough Terrain

SOMEWHERE IN ITALY, Sept. 25 (Delayed) (U.P.)—A new type of American cavalry, known as the Provisional Mounted Reconnaissance Troops and composed of American volunteers who are experienced horsemen, has gone into action on the Salerno front.

They came into being as the United States Fifth Army began meeting tremendously difficult terrain as it pushed forward steadily in Italy. The mounted troops have shown special ability in wiping out enemy machine-gun nests and hidden mortar and artillery groups. They have also attained grand results in knocking out German artillery posts in mountain positions inaccessible to almost anything but a horse.

Most of the troopers were cowpunchers or farm boys who have been riding from youth. One or two were star rodeo performers.

"Only a few of our horses have been brought from America," said Pfc. John F. Meglich of St. Louis, Mo. "Actually most of them are German and Italian cavalry horses that were captured in Sicily.

"We do almost everything, from delivering food, water and supplies to outlying posts where trucks and even tanks can't go sometimes to knocking out machine gun nests.

"We are pretty good with the use of these little yellow golf balls," he said. Then he held out some plump, yellow-painted hand grenades which the troopers carry attached to their saddles.

Meglich said he had been a cowpuncher before the war, mostly on ranches around Pierre, S. D. Pvt. John Backiel of Northampton, Mass., another trooper, said he learned to ride horses on his father's farm.

"We also use a large number of mules as well as horses," said Backiel. "Mules are used to carry packs like food and ammunition."

The Perak River Crossing

The Perak River runs south from Kuala Kangsar, the site of the first of the British positions, where the highway and railway cross the river, for nearly 62 miles as far as Telok, where it turns west and some 12½ miles farther on empties into the Malacca Straits. After crossing the river at Kuala Kangsar, the railway and highway climb the hills on the eastern bank, then turn south, and roughly parallel the river at a distance of one or two miles. They pass through Ipoh, the site of the second British position, and from there run west close to the river until it flows through Telok, whence the roads continue south towards Kuala Lumpur.

Air reconnaissance had informed the Japanese that the British were preparing to defend the river line at Kuala Kangsar, at Ipoh, and at Telok, and that the field fortifications at the last two places were so arranged that they were capable of defense against any force coming down the road from the north as well as against any attempts made to cross the river from the west.

All three of the British positions were strong and would be difficult to take. The line that they were trying to defend, however, was very extended, and, as it faced west and their line of retreat was to the south, it was extremely vulnerable to any attacks made at its southern extremity—namely, Telok.

General Yamashita had been unable to use more than about one division at a time in any engagement thus far, because of the narrow front on which his troops had been operating. Now, however, with a 62-mile front to attack, he was in a position to use the major portion of his force, and with plenty of room in which to maneuver he could use his troops to greater advantage than merely having them slug their way down a narrow road.

All of the artillery of the motorized division which had been leading the column was placed in position on the Larut Hills and brought to bear against the British forces at Kuala Kangsar. From the summit of the pass, however, the road wound down the mountain side to the river for about 3 miles in full view of the British batteries, and it was impossible to move any large bodies of troops down this road to positions where they could come into contact with the enemy on the far bank. All that the Japanese could do was to send down small detachments at night, when by moving rapidly and at ir-

regular intervals they could traverse the road without suffering too heavy casualties from the interdictory fire of the British batteries, which kept pounding this road throughout the hours of darkness.

The British guns were well protected, and in spite of the fire of the motorized division's artillery and a number of dive bombing attacks, the Japanese were unable to silence them. It became clear that it would be impossible to cross the river at this point. The Japanese determined to attempt a crossing at a point near Ipoh, about 12 miles downstream from Kuala Kangsar. The British positions at this point were every bit as strong as those farther upstream, but the flat, thick jungle, which extended right up to the bank of the river, enabled the Japanese troops to approach much closer without being seen.

The "roads" through this area were scarcely more than native paths. The Japanese used three regiments of engineers over a period of four days in improving the road from Taiping to the point on the river bank opposite Ipoh that they had chosen for their attack. By the morning of the 26th, the artillery of the division selected for the task was in position in the jungle, and the infantry units and engineers, in assembly areas close to the river, were prepared to move forward when the time came, launch their rubber assault boats, and cross to the opposite bank.

All day long the artillery fired a heavy bombardment against the British lines. The actual crossing was set for the morning of the 27th, and in the early morning hours before daylight, three combat teams composed of engineers and infantry moved up to the river bank and waited for the signal to launch their boats. Just after daylight, bombers came over and rained high explosives on the British lines for nearly half an hour. As the last plane disappeared, the assault teams shoved off from the bank of the river and started paddling across.

Because of the heavy bombardment, the Japanese thought that they were going to be able to cross the river with very little opposition. But the British positions had been so well hidden in the jungle that neither the artillery nor the bombers had succeeded in accurately locating them. As a result, there were enough machine gun nests and batteries in action that morning to turn such a hail of fire on the Japanese as they paddled slowly across the river that the attack broke down almost before it started. Japanese losses must have been very heavy, for there were no further attempts that day to renew the advance.

Although this attack was itself a failure, it did succeed in ultimately getting the Japanese across the Perak River. The British apparently realized that if and when the Japanese ever did cross at Ipoh, the troops at Kuala Kangsar would be cut off from retreat, and therefore they withdrew the garrison from its defense of the bridges at that point and moved them south to join the troops at Ipoh. This evacuation, of course, enabled the Japanese to cross at Kuala Kangsar. By the afternoon of the 27th, General Yamashita had a division on the eastern bank of the Perak River ready to move on the British at Ipoh from the north, as well as a division which was ready to attempt a crossing from the west bank.

The attack was launched again on the morning of the 28th, and concentrated fire from the batteries of two divisions plus some additional heavy artillery was directed against the defenders. For the first time in the west coast campaign, two complete Japanese divisions were employed simultaneously. But in spite of all that they could do, they were unable to dislodge the Australians from any but the most advanced positions.

During the day three onslaughts were repulsed by the defending troops. Late in the evening, after having repulsed the third attack, the British command suddenly retired and, leaving only a small rear guard in the lines at Ipoh to cover their withdrawal, moved rapidly down the road in the direction of Telok. The cause of this retreat was the sudden appearance of a strong Japanese force at the mouth of the Perak River near Telok. This was a third division which the Japanese had moved south through the jungle until it reached the coast at a small town called Lumpat. There, after assembling a number of knocked-down motorboats which they had brought with them, they embarked two specially organized assault battalions, which moved down the coast some 19 miles to the mouth of the Perak River, where they headed upstream towards Telok.

The plan was to surprise the garrison at Telok before daylight, capture the town, straddle the road coming south from Ipoh, and so bottle up the retreating British

The Conquest of Malaya from the Japanese point of view.

Like the two installments of "Philippine Campaign," and the account of the Hong Kong Campaign written by Colonel Babcock, this account of operations in the Malaya Campaign is based on information drawn entirely from Japanese sources: official bulletins, news reports, speeches, radio commentaries, magazine articles, and personal experience accounts written by officers and men at the front. The only Allied bulletins used were those quoted in the Japanese press.

Colonel Babcock says: "While confined to the compound of the American Embassy in Tokyo from the outbreak of war until June 17, 1942, I was cut off from any outside news. Consequently, the preparation of this paper has not been influenced by information received through any but Japanese sources. It should also be remembered that all dates are one day advanced over those used in the United States."

troops. A small British river patrol, however, discovered them about 6 miles downstream from Telok and gave the warning in time to alert the garrison. The British were ready when the Japanese boats arrived, and as the attackers had no artillery or aviation support, the defenders had no difficulty in repulsing them. But the appearance of Japanese troops virtually in rear of their lines alarmed the British High Command to such an extent that it was apparently decided to abandon the defense of the Perak River and to withdraw to the vicinity of Kuala Lumpur where the next defensive line was being prepared.

Battle of Kuala Lumpur

The defense of Kuala Lumpur consisted of a series of gallant fights in which the British time and again repulsed the most desperate Japanese attacks, only to be forced ultimately to give up their positions because of Japanese landings behind their lines. By this time, the British had received both air and ground reinforcements from India, and the 11th Division, after withdrawing from Telok down the road toward Kuala Lumpur, passed through the lines of the recently arrived 45th Indian Brigade, which was building a defensive position in a defile just north of Trolak.

The terrain at this place is somewhat similar to that encountered by the Japanese in the pass through the Larut Hills, and they were forced to employ the same tactics in their attempts to overcome British resistance at this point. Now, however, the British forces consisted of a full brigade of fresh troops supported by a mountain artillery brigade, and the repeated frontal attacks which had overcome the lone Australian battalion in the previous fight were unable to wear them down. The British had enough troops available for the defense of this pass to enable them to rotate the battalions in the trenches, so that when the Japanese brought up fresh troops, the British also were able to bring reinforcements up into the line.

The Japanese unit involved in this action was an infantry division, which up until then had not seen any serious action. The motorized division, which had led the march ever since the landing at Singora, had been pulled out after the Larut Hills fight and had withdrawn to Taiping for rest and reorganization. For some reason or other, the Japanese did not press their pursuit after the British abandoned Ipoh and Telok, probably because the troops which had marched south through the jungle and attempted to land at Telok were scattered between that town and the mouth of the Perak River and Lumpat.

The logistics problem involved in supplying the Japanese division on the coast was a difficult one. Some time was required to work it out and to reassemble the division at the mouth of the Perak River preparatory to resuming operations along the coast. As the advance of the main column down the highway depended on the success of the landing operations to be carried out by this unit, the entire Japanese force was held up for several days, while the necessary supplies and boats were being assembled in the vicinity of Telok.

When all preparations had been made, the Japanese advance division moved out of its bivouac south of Ipoh and headed down the road towards Trolak, where an advance detachment had been in contact with the Indian Brigade ever since the 28th of December. The march of the division was timed so as to arrive at the defile early on the morning of January 4th. The division commander had preceded his troops and had his plans ready when the first of his units arrived at the scene of battle.

As in the Larut Hills fight, the only way for the Japanese to advance was for the troops to force their way through the pass by sheer superiority of fire power. All of the division's artillery was brought to bear on the narrow British front. While the bulk of the infantry remained well behind in assembly areas, one battalion at a time, aided by a few flame-throwing tanks and specially trained engineer teams, attacked the strong points in succession and fought desperately against the Indian counterattacks until the next assault battalion passed through it to assail the strong points in rear.

For three days the Japanese, using fresh troops every day, attacked unceasingly with all the modern weapons at their command. By the end of the third day they had succeeded in penetrating only the first line of the defensive position. Had the British been able to bring up fresh troops, it is very likely that they could have deprived the invaders of even these small gains. The Japanese say that their air reconnaissance on the afternoon of January 7th showed that a motorized column was in fact proceeding up the road from Kuala Lumpur

towards Trolak, where they believed the British intended to use it in a counterattack to drive them out of their position.

That morning, however, the Japanese division, which had been assembling at the mouth of the Perak River, embarked a detachment of troops in its motor boats and in a number of native boats that had been commandeered up and down the coast, and effected a surprise landing just south of the mouth of the Bernam River where a road runs east through the jungle for about 37 miles and joins the west coast highway at a point between Trolak and Kuala Kubu. In spite of the fact that this was the second time the Japanese had made use of this maneuver, the British seem to have been caught completely unawares.

As the Japanese pushed along the jungle road which led eastward from their landing point on the coast, they encountered no resistance until a detachment of Australians, which had been rushed down the road, intercepted them less than 10 miles from the main highway. Unfortunately for the Japanese, their advance units were lacking in artillery and were unable to push through the Australians to secure a position across the highway south of Trolak. Had they been able to do so and to hold the position until the arrival of the remainder of their division, the Japanese would have been able to trap the 45th Indian Brigade as well as a brigade of Australians, which was still in the vicinity of Trolak. By the time that sufficient troops had come up to drive the Australians back towards the highway, the British troops from Trolak had succeeded in effecting their retreat and were well on the way to Kuala Kubu.

At Kuala Kubu a part of the Australian division was astride the road in a position of some natural strength, but as the country was more open than that farther north the defense of the area was going to be more difficult than that of the narrow defiles and jungle passes which the British had thus far been holding. The Japanese spent two days, the 9th and 10th, in launching fierce attacks against the Kuala Kubu defenses. All of these onslaughts were repulsed, and at no time did the Japanese succeed in penetrating even the outer lines. But they did succeed in pinning the British to their position and in making them use the bulk of their troops against the forces moving down the highway. By this time the British realized that the most serious threat to their defense of the Malay Peninsula lay in the Japanese units proceeding down the west coast and landing behind the defensive lines.

In an attempt to block this maneuver, the British had sent a force to Kuala Selangor, at the mouth of the Selangor River, where the next attempt at a landing logically could be expected. A railway runs southward from Kuala Selangor as far as Klang, where it joins the east-west line from Kuala Lumpur to Port Swettenham. It was therefore vital to the defense of Kuala Lumpur for the British to hold Kuala Selangor and Port Swettenham, and they garrisoned these coastal points with all the troops that could be spared from the defense of the main position.

The heavy attacks by the main Japanese forces engaged so many troops that the British were unable to send an adequate force to defend the coast. They did succeed, however, in repulsing two Japanese attempts to land in the vicinity of Kuala Selangor, but the credit for this set-back must go to the RAF. A number of new squadrons had been sent out from India and the Middle East about this time, and the British very wisely employed their bombers in breaking up attempts to land along the coast. The Japanese could not have known of the arrival of these new air reinforcements, for their first attempt to land at Kuala Selangor was not protected by fighter planes. When the British bombers came in to attack, the Japanese were caught about three-quarters of a mile offshore, crowded into open boats which were easy marks for bombs and machine guns. It seems certain that few if any of this force escaped, for in Japanese accounts of this fight there are many references to the gallant way in which men died without attempting to retreat.

Next day another landing was attempted at the same place, and that time the troops were protected by a squadron of fighter planes which inflicted heavy losses on the British bombers when they swooped in to attack. The second attempt also must have been a failure, for it was not until the third day that a successful landing was made. On this occasion, the Japanese filled the air not only with fighters but with dive bombers which battered the beach defense so badly that the troops encountered very little resistance as they came ashore. The Japanese lost no time in pushing south down the railway towards Klang, while the main body of their coastal division was brought down the coast in transports and landed at Kuala Selangor to reinforce the advance detachment. The successful landing of a large force south of the Selangor River sealed the fate of Kuala Lumpur, and on the 11th the Australians pulled out of their positions at Kuala Kubu and, moving south, abandoned the city and the entire district to the Japanese.

From that time until they reached the Muar River on January 18 there was no serious fighting; the British rear guards merely delayed the Japanese columns sufficiently to enable their own main forces to retreat without serious molestation.

The East Coast Column

In the meantime, the Japanese column on the east coast had been able to advance at about the same rate as the main Japanese forces in the west, without any particularly heavy fighting. After retreating from Kota Bharu the British had held the line of the Trengganu River, but after the piercing of the Perak River defenses these troops had withdrawn south and taken up new positions along the Pahang River in order to keep contact with their forces in the west. The fall of Kuala Lumpur and the retreat south to the Muar River on the

west coast again exposed their left flank and they were forced to retreat once more, in spite of the fact that they were perfectly capable of holding indefinitely the forces with which they themselves were engaged.

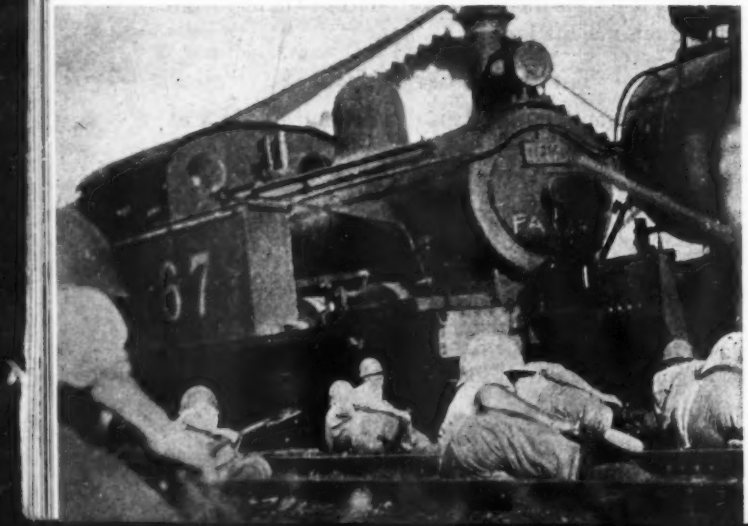
The Conquest of the Southern Plain

When the Japanese penetrated the southern part of the state of Negri Sembilan they came out of the mountains on to the flat plain of the southern tip of the Malay Peninsula, and for the first time in this campaign had sufficient room to employ all of their units at once. The lines that the British intended to hold paralleled the Muar River through Gemas and then ran roughly eastward to Endau on the east coast. Here for the first time, the two armies faced each other as units, for until this line had been reached the high mountain range which runs down the center of the peninsula had separated the armies into two independent columns.

The Australian defense of Gemas was one of the bright spots of the campaign for the British. The Japanese say that it was the fiercest fighting they had on the entire peninsula, and that they suffered their heaviest losses in attempting to break down the stubborn defense of this town. But, gallant though the defense was, it was nullified by another landing south of the Muar, when a Japanese unit embarked in boats at Malacca town and after moving down along the coast, captured Batu Pahat south of the river. At the same time the main Japanese forces crossed the Muar at Bakri, a few miles downstream from Gemas.

This engagement was one of the most disastrous of the campaign for the British, for it caught them just as they were withdrawing from their positions as a result of the landing at Batu Pahat. Losses were heavy, and the troops were so badly disorganized that no further attempt was made to stop the Japanese until they reached Johore Bharu, across the straits from Singapore. The retreat of the troops defending the Muar River line forced the withdrawal of the east coast division, which had been successfully defending Endau for nearly a week. Although the British abandoned any attempt at general resistance after the Japanese had forced the Muar River, and simply marched their main columns south as fast as they could go, they left behind two strong rear guards that fought a number of fierce engagements during the retreat and held up the Japanese sufficiently to allow the demoralized army to get to Singapore in safety.

Japanese infantry fire from behind a train during the attack on Johore Behru. Photograph from neutral source.

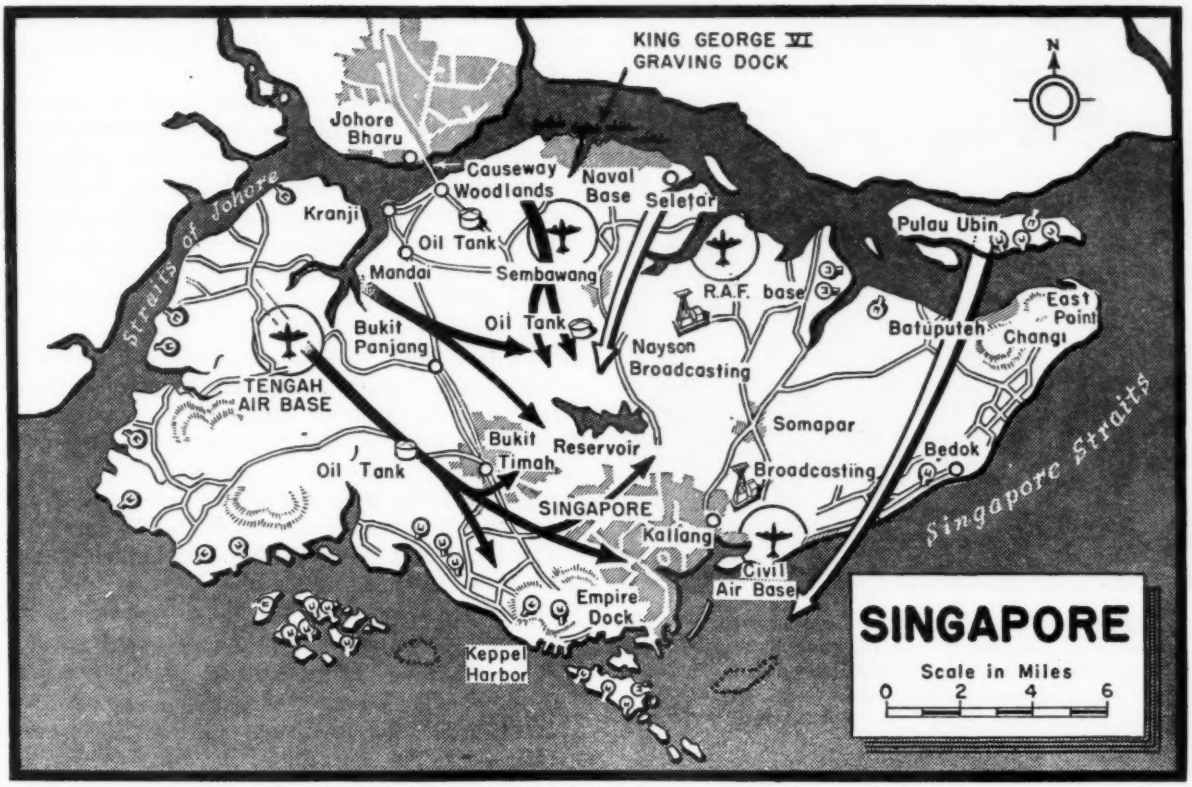


The Capture of Singapore

When the Japanese occupied Johore Bharu on January 31st, they secured complete possession of the Malay Peninsula mainland, and found themselves within less than a mile of the great British naval base at Seletar and within artillery range of the whole island of Singapore. They had entirely eliminated Singapore as a useful enemy base, and probably could have reduced it in a couple of months by means of a blockade and a continuous artillery bombardment. But a number of factors operated to influence their determination to adopt the more expensive and quicker method of direct assault. The moral effect of an early fall of this so-called impregnable fortress upon both their own people and their enemies was one important point, as was also the desire of the navy to secure possession of the naval base, and thus obtain free passage for their ships through the Straits of Singapore.

These straits, besides being heavily mined, were under the control of the guns of the British fortresses on Singapore and its neighboring islands. Moreover, the Japanese troops engaged in the siege of Singapore were

In order to stem the tide of Japanese aggression, the British dynamited the dam connecting the straits of Johur with Malaya. But this did not stop Jap progress, or the final conquest of Malaya. This photograph, received from neutral sources, shows the Japs using prisoners of war to reconstruct the dynamited dam.



badly needed for the campaign against the Netherlands East Indies, which was now well under way, and for the campaign in the Philippines which was not progressing according to plan. The Japanese High Command, therefore, had determined to capture Singapore as quickly as possible, and for this purpose had sent down into the Malay Peninsula large quantities of heavy siege artillery. These guns, which were sent by rail from Thailand, began to arrive in the peninsula soon after the break-through of the Muar River defenses, when it had become evident that the next real fight would be the assault on Singapore itself.

From January 31st until February 5th there was very little activity on the front, as the Japanese spent those six days installing their big guns and disposing their troops for the final attack. Two fresh divisions, composed of veteran soldiers of the China campaign who had received special training in river crossings in preparation for this very task of storming the Straits of Johore, were now brought up to relieve those divisions that had fought their way down the peninsula. These troops were assembled in covered areas some 6 miles behind the Japanese artillery positions so that they would not be subjected to bombardment by the big guns in the British fortress during the artillery fight that necessarily would precede the actual assault. Special parties of officers and noncommissioned officers from all of the infantry and engineer units of these divisions made almost daily trips up to the very front lines on the banks of the Straits of Johore in order to become thoroughly familiar with the terrain over which they would later have to operate in the dark.

The bombardment, which began at 6:00 P.M. on February 5th, is said to have been the heaviest concentration of fire ever put on by the Japanese army. The guns used were of all calibers, but the main punch came from modern 240mm howitzers, which had been specially built for this very purpose.

The backbone of the British defense consisted of the great coast defense fortresses at Pulau Ubin, Changi, and the outlying islands. In addition there were a number of recently constructed field fortifications that extended around the northern and eastern shores of the island facing the Japanese across the Straits of Johore. These were not permanent fortifications and consisted almost entirely of trenches and earthworks, but they had been constructed to an average depth of some 6 miles and presented a formidable obstacle when manned by resolute troops. The shore of the island was a mass of wire entanglements and other obstructions, and a number of concrete pillboxes had been constructed for shore defense. The range to every point within the Japanese lines had of course been well plotted, and all Japanese accounts speak feelingly of the accuracy of the British artillery fire in the early stages of the fight, before the overwhelming weight of the Japanese fire had eliminated it as a decisive factor.

For three days the artillery duel went on, and all the

This British Fortress gun, firing from an extremely well camouflaged position on the coastline, was one of the islands of resistance that helped delay the Japanese advance on Singapore Island.

while Japanese bombers droned overhead in successive waves, unopposed by any enemy airplanes, and, after the first day, with little if any antiaircraft fire to bother them. Day by day, the fire from the British lines grew weaker, as battery after battery was put out of action, and it soon became obvious that the time for the infantry assault was at hand.

On the afternoon of the 7th, the infantry-engineer assault teams were moved up to their jump-off positions, and the Japanese light and medium artillery began concentrating their fire on a 300- or 400-yard strip of ground running along the north shore of the island from Kranji to East Point. Observers who watched this final phase of the preparatory bombardment say that the land across the straits was a solid mass of smoke and fire and that it looked as though nothing could live under that rain of shells. That night, however, when the assault teams shoved off in their rubber boats and assault barges to make the dash across the kilometer-wide stretch of water, there was ample evidence that a good many men had lived through that hail of fire.

As soon as the British realized that the attack was actually at hand, they flooded the Johore Straits with searchlights and turned loose the fire of all the machine guns and mortars that were still in action. The few remaining artillery batteries, not wiped out by the Japanese barrage, also joined in and concentrated their fire on the waters of Johore Straits.

The Japanese had not expected that so many British guns would still be active and their losses were unexpectedly heavy. In fact, the first wave was repulsed, and very few survivors succeeded in returning to their own shore. The final outcome, however, was never in doubt, for there simply were not enough British guns to cover the two fronts on which the Japanese were attacking.

At some time between midnight and 1:00 A.M. on February 9th, one of the Japanese combat teams gained a foothold on the island of Singapore on the northwest shore about five miles from Tengah air base. The British at once attempted a counterattack to take this beachhead away from the invaders, but the attack seems to have gone astray in the darkness and confusion of the fighting. Only one company of Australian troops succeeded in reaching the Japanese position. Here a sharp hand-to-hand fight took place, and for a while it looked as if the Japanese might indeed be driven back to their boats. But another battalion came over just in time, and from then on the attackers were never in any danger of losing what they had gained. Before dawn, another Japanese detachment succeeded in effecting a landing east of the causeway, between Woodlands and the Seletar naval base. During the daylight hours that followed, a steady stream of reinforcements was employed in enlarging these beachheads sufficiently to permit the organization of a new offensive on the island of Singapore itself.

A third landing was effected that same night on the island of Pulau Ubin, less than a mile from the fortress of Changi. By the afternoon of the 9th, these troops had gained complete control of the little island and of what was left of the British batteries located there. Before the surrender came, the Japanese trained the one remaining serviceable gun in the fortress of Pulau Ubin against Changi and had the satisfaction of bombarding the British with a gun from one of their own batteries.

As soon as the Japanese had firmly established themselves on both sides of the causeway and, by the fire from these beachheads, had eliminated that of the defenders of the causeway, a party of engineers set about the task of repairing the kilometer-long bridge, which had been destroyed by the British after the last of their troops had crossed from Johore Bharu. Either the Japanese engineers performed an incredible feat (which is what they claim) or else the British did a very poor job of demolishing the causeway (which is what photographs would seem to indicate), for by noon on the 8th the bridge had been repaired sufficiently to enable foot troops to cross, and by evening of the same day, wheel traffic was pouring across the causeway in a continuous stream.

From this time on, the battle was merely a matter of time. Actually, the ensuing six days saw the fiercest kind of fighting, but the result was never in doubt. The Japanese used the German so-called spearhead method of attack: that is, the fighting was done by two columns which penetrated the British line and then fanned out behind it to the east and west. So that before the battle was over they had broken the British army up into a number of islands of resistance, the principal ones of which were located at the RAF base at Seletar, the

fortress of Changi, the high ground north of the reservoir, and the high ground around Bukit Timah. This last-named place was defended by what was left of the Australian division, and the defense of the town was considerably aided by fire from the guns in the batteries off the south coast, which shelled the Japanese to good effect during the three days that it took them to drive the Australians out.

The last four days of the battle were marked by great confusion, with isolated groups of British almost completely surrounded, fighting desperately in the hope that conditions might not be so bad in some other part of the island and that aid might reach them before they were forced to give in. Even the Japanese troops were badly disorganized, and the direction of the fighting seems to have been pretty well decentralized. Each regimental and column commander seems to have changed the direction of his attack as circumstances required.

One by one the British centers of resistance collapsed, and by the morning of the 15th, Japanese and British troops were fighting in the northwest suburbs of the city of Singapore itself. It was obvious then that further resistance was useless. General Percival, the British commander, sent word to General Yamashita that he was prepared to negotiate for the surrender of his troops and of the island fortress. The two officers, together with a few members of their staffs, met at the Ford Motor factory at 7:00 o'clock on the evening of February 15th. By 7:50, General Percival had signed the document which unconditionally surrendered one of the greatest naval bases and fortresses in the world.

In little more than two months the Japanese had traversed "impassable" country, had engaged repeatedly in heavy fighting against well trained troops, had marched more than 600 miles, and had, in a two-weeks siege and assault, reduced an "impregnable" fortress. Singapore, the center of the defense of the ABCD powers in the Far East and the base vital for their "punitive blockade" of Japan, had fallen. With it, those powers had lost most of their sources of rubber and tin to the very nation from whom they had hoped to withhold those commodities. Soon, largely as a result of the fall of Singapore, they were to lose the Netherlands East Indies and some of the richest oil fields in the world.

As the Japanese authorities did not fail to point out, Japan had broken through the "ABCD encirclement ring" and was now in a position to institute a counter-blockade of its own.

General Sugiyama and General Yamashita, conqueror of Singapore, confer during an inspection of the fallen city.

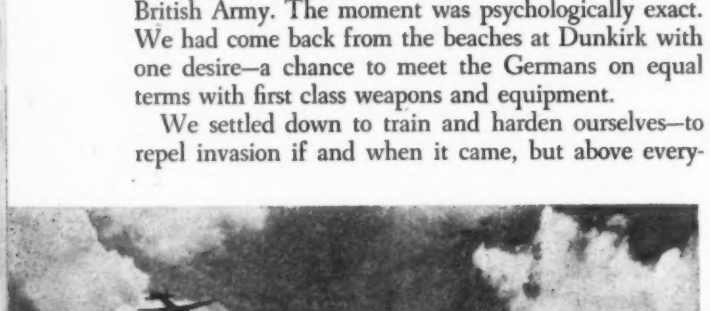
Natives remove debris in one of Singapore's less bombed streets.

When the Green Light Flashes

by Lieutenant P. A. Young, Parachute Regiment, British Army

IT was immediately after the fall of France that paratroop training began for volunteer personnel of the British Army. The moment was psychologically exact. We had come back from the beaches at Dunkirk with one desire—a chance to meet the Germans on equal terms with first class weapons and equipment.

We settled down to train and harden ourselves—to repel invasion if and when it came, but above everything to prepare for the day when we would return to Europe. Most of us had been in France. All of us were filled with a new spirit, and it was with delight that we realized that the old days of defensive tactics were gone. Our training, even in those days of imminent invasion, was for attack!



British Official Photo

British paratroops and their supply chutes make a massed descent during training.

Training

For long weary weeks we toughened and hardened ourselves. We did away with transport and, carrying full equipment and avoiding roads, we marched for miles across country. We dashed over assault courses while bullets whined and sang overhead. Everyone became expert at map reading, compass work, small arms, unarmed combat. We practised night work, full scale attacks, small raids and patrols. We learned to forage for ourselves, cook our own food, read the stars, and read the country. We drove every type of car, stood at the controls of railroad engines, inspected coal mines and electric plants and practised sabotage. We fired every conceivable type of weapon from a pistol to a 25-pounder gun. We learned all about explosives, and we practised with all types of German and Italian weapons until we knew them as well as we knew our own.

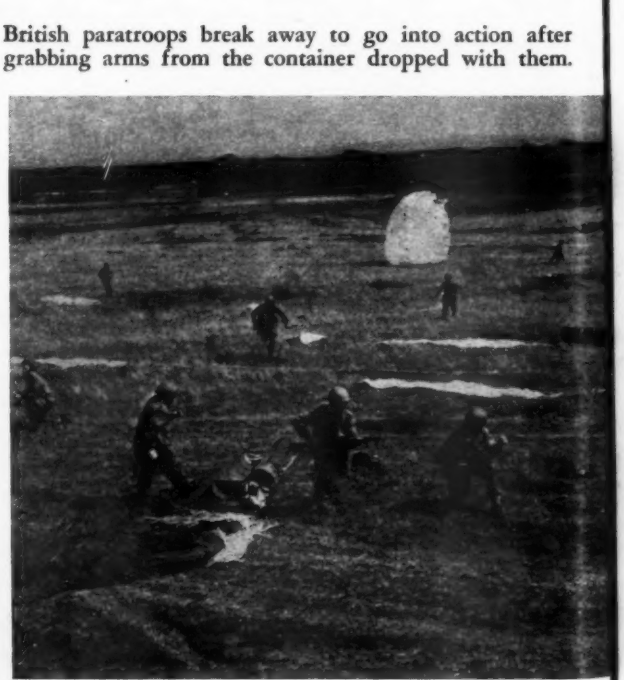
We grew into a team. We worked together, swore together, ate together. I had a happy knack of cooking and so when I could spare the time I usually turned into platoon cook on maneuvers.

Also, we learned parachuting. Starting with exercises in the gymnasium, we worked up to leaping from trucks, practising from a parachute tower, and jumping from a captive balloon. Then we jumped from all types of aircraft until we were experts and could have an entire company landed and formed up ready for action within ten minutes of dropping. We studied German methods.

Raid on the Coast of France

At last the day arrived. One December day in 1941 my company left the battalion for a secret destination, and there we trained for action. We were not told for some time that we were going to raid the coast of France, but we guessed something was brewing. We trained in close coöperation with the Navy and the Air Force and, after a few heart-breaking days of waiting for the right weather, we climbed aboard our aircraft—

British paratroops break away to go into action after grabbing arms from the container dropped with them.



British Official Photo

all of us armed to the teeth and carrying explosives.

Our object was to blow up the German radio location station at Bruneval, near Le Havre. It was situated on the cliff top, and we were to land in a field 500 yards behind it. The first party to land was to be a platoon of 40 men, heavily armed with rifles, Bren and Tommy guns and grenades. They were silently to surround the beach defenses and wait for a signal to attack. Then would come the main objective group, including engineers, armed for close combat with Tommy guns, pistols, knives and grenades. My section would lead this group, go straight to the set itself, and hold it until the arrival of the others who were to deal with a house (the Nazi headquarters) on the way. Finally was to come another platoon which would provide a covering screen. We were to get away by boat.

Tracer bullets from the defenses flew past as we came over our field. The Red light flashed. I was No. 1. I swung my legs over, winked at my men, and waited. Green light! I dropped.

Shadowy figures floated to earth beside me. Machine guns chattered below, and the bullets sang past. Ah! Here we were. I dashed to our container and collected my men. "All correct!" I led the way, and we sprinted for a gully to our front. The beach attacking party were on their way; the covering group were touching down behind us. The ground was familiar—we knew it by heart from models and photographs. I reported to the C.O. He looked at his watch. "Get going, Peter!" I ran back to the section. "O.K., boys, this is it. Off we go!"

We ran lightly across the snow towards the set. A shot rang out, and another. We skirted the house and made for the set. I had a bomber on either side of me—fingers around grenade pins. My automatic was ready, my knife in my left hand. We were 200 yards away. No sign of the Germans yet.

Wire! We three in front covered our faces and flung ourselves upon it. The rest ran over our bodies and lay down on the other side. The last men pulled us clear. We re-formed and moved off. A machine gun opened up on our left, and a group of bewildered Germans appeared to our front.

"Grenades!" I yelled. Out with the pins—throw! We flung ourselves down as they burst among the Germans. Some fell. Others ran. The man on my left dropped one right in the machine gun pit. The gunner pitched over the edge of the cliff. The gun was blown to bits. We sprinted forward, firing as we went. My sergeant dropped on one knee and aimed at a running German. Crack! The German pitched on his face. Now we had the set. From all around came the rattle of fire and the crash of explosives. The others were attacking! The German beach defenses were firing madly out to sea. They did not realize that they were being attacked from the rear. We began clearing the dugouts.

A British paratrooper with full equipment and parachute. He is armed with a Sten submachine gun which is tucked underneath the parachute harness on his chest.

British Official Photo

The engineers arrived and we were reinforced by the other group. We covered the engineers while they prepared their charges. The fire grew in intensity. One of them dropped; another took his place. At last they reported "All ready!" The C.O. led the way and, dragging one bewildered prisoner with us, we began to withdraw towards the beach.

The set exploded with a roar behind us. Warning shouts greeted us as we topped the rise leading to the beach, and machine guns opened up.

The beach defenses were still in action. The C.O. rapidly explained his plan. We had to get to the beach without delay so that the boats could come in. Contact was made by radio with the group down there around the pill boxes and, dropping flat, we wormed our way forward.

We attacked together by throwing grenades in teams. About 25 grenades exploded simultaneously among the German trenches and pill boxes. Then we charged, the Scotsmen among us shouting their battle cries. There was no fight left in the Germans. They surrendered.

We then contacted our landing craft by radio. They were waiting three miles off shore. The other groups closed in, and we formed a defensive ring around the beach and waited. Except for desultory sniping and a little shelling, the Germans made no attempt to stop us.

At last our boats came chugging in, pouring a hail of fire from their guns to the cliff top. They couldn't come right in so we had to wade and swim out to them. At last we were all aboard and off we went. The return trip to England took 14 hours and during that time, while destroyers circled around us and Spitfires droned overhead, we saw no sign of any Germans, though we were specially equipped with antitank rifles to deal with their E-boats should they appear.

The raid had been a total success. The Germans had been taken completely by surprise. They had lost over 60 dead. Their radiolocation station was completely destroyed, and we had three prisoners. Out of our original 120, we had one killed, seven lightly wounded, and five missing. We had lost no aircraft, and our ships remained unattacked. We had learned valuable lessons. We knew now that our grenades were effective against anything the Germans had, that our training was correct, that toughness and physical fitness were as essential as mental alertness. We knew, too, that we had been right to insist upon the strictest discipline while on the job, and comradeship between officers, N.C.O.'s and men in our leisure hours.

More Training

After a brief period of leave we started training again. We passed on the lessons that we had learned to others, and once again went at it full blast! This time we worked on a bigger scale together with American parachute troops recently arrived in England. Their transport aircraft were better suited to our purpose than our own bombers. They were a fine crowd of fellows, and keen good-natured rivalry developed between us.

As the numbers of American transport aircraft and equipment increased, more volunteers were admitted. For nearly a year we carried on—fighting imaginary battles all over England, studying new methods, practising new ideas. New weapons were introduced—high explosive charges that could be converted into grenades that would blast any tank the Germans had. Also, a new type of Tommy gun, new uniforms, equipment and steel helmets appeared.

When our formation sailed for the invasion of North Africa in November, 1942, it was a highly skilled and technical body of men, in the pink of condition, splendidly equipped and yearning for action.

Tunisia

A few days after landing, we were once more in our aircraft—flying over the bare mountains and arid plains en route to Tunisia!

Our objective was an airfield just inside the Tunisian border, and here we were lucky. The whole battalion baled out and landed unopposed. The French received us with open arms and provided us with food and transport. Thus equipped, we headed for Tunis.

We did not know where the Germans were. Our orders were to push ahead as far as possible until we could advance no farther, then to hold the enemy until the First Army came up. Thus began our first campaign as paratroops. We met the Germans just outside Mateur, destroyed seven of their tanks, and dug ourselves in.

We held on for over two weeks. In that time the Nazis threw in attack after attack but gained no ground. Then other troops came up. We remained in action until April—fighting as shock troops. The campaign was long and arduous. Conditions were tough, and we were glad that we had trained for them. Fighting was vicious and raged up and down the line for months, without either side gaining ground.

Many of the Nazis had come from the Russian front. They were badly shaken and demoralized by their terrific defeat at Stalingrad, and we resolved to try and equal it in Africa.

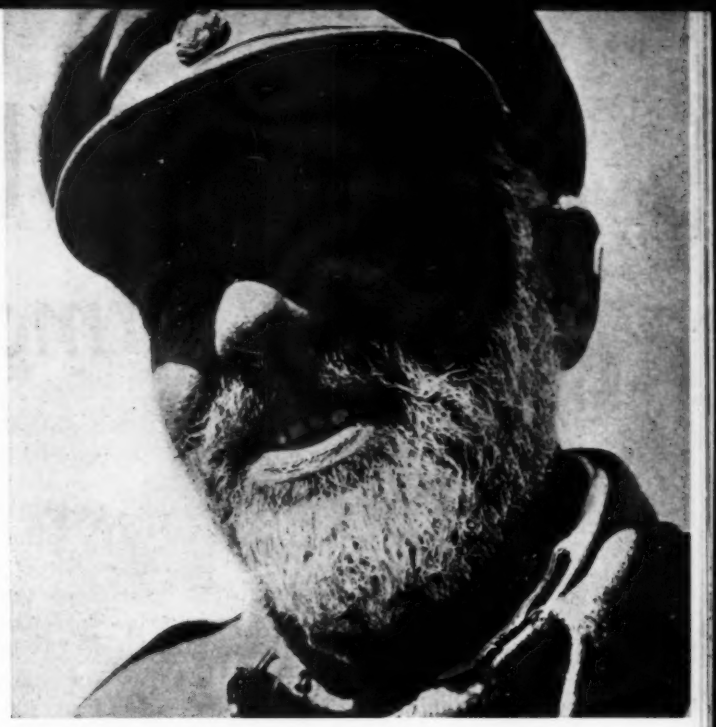
Because we wear red berets, the Nazis called us the "Red Devils," and when the men realized this they threw away their steel helmets and attacked wearing their berets!

I was eventually wounded during the battle for the German-held strong point on Djebel Mansour. Sadly depleted, we came out of the line in April and went to the rear. It was estimated that my battalion had killed over 7,000 Germans and captured another 2,000. The battalion was reinforced, enlarged and re-equipped, and somewhere in the African desert, before the final victory in Tunisia, training started once more.

Back in England, I heard the news from Sicily. Once again the "Red Devils" had struck.

The Greeks Have a Word for It— "AERA"

by George Haniotis



Colonel Christodoulos Tsigantes, commander of the "Sacred Brigade" of the Greek Army, attached to the British Eighth Army across Libya, performed invaluable service on advance missions from Alamein to Tunisia.

RANKING with the British commandos and the fierce Moroccan Goums, the Greek "Sacred Battalion" was one of the most picturesque fighting units that took part in the North African Campaign. This battalion, a unit of about 500 young Greeks, eighty per cent of them former officers in the Greek army, was formed in August of 1942.

Many more officers than enlisted men were able to escape from Greece following the Axis occupation. As there were not enough troops for them to command, a number of these officers conceived the idea of banding themselves into commando-like units. They chose the name "Sacred Battalion" after a volunteer group of selected Thebans in a war with Sparta. During the Greek War of Independence in 1821 the name was resurrected and given to a group commanded by Prince Alexander Ypsilanti.

The present "Sacred Battalion" has adopted as its insignia a spear and laurel wreath with shield on which is inscribed, "With this or on it," after the advice of the Spartan mother to her son as she handed him his shield.

The men of the Greek battalion were distinctive in the polyglot Allied armies because of their full beards, dark red balaclava wool helmets, and commando boots. The commander, Colonel Christodoulos Tsigantes, is a strict disciplinarian who insists that all candidates for his unit go through special qualifying tests, difficult in the extreme.

There is no second in command. All other ranks, regardless of their shoulder insignia, serve on an equal basis, and are chosen for special tasks according to their qualifications.

The "Sacred Battalion" first saw action with the Fighting French troops under General Leclerc and later fought alongside the New Zealanders under General Freyberg. It was the first unit to push forward ahead of the French in the initial move to out-flank the Mareth Line and was among the first to enter Gabes. It is reliably reported that the Italian troops particularly lost all stomach for fighting when they heard the Battalion's battle cry of *"Aera."*

While the "Sacred Battalion" is perhaps the most picturesque, it forms only a small part of the Greek forces in Africa and the Middle East. Two brigades, three air squadrons and a number of specially trained parachute troops are ready and waiting for the day when they can return as avengers to Greece.* A Greek navy composed of some 35 units has been constantly in action since the initial onslaught of the Italians against Greece on October 28, 1940. These units took part in the recent action in the Dodecanese and Aegean Island area.

Greek armed forces, composed principally of volunteers from Greek communities abroad and persons escaping from occupied Greece, are not the only ones who have been carrying on the fight. Inside Greece there are approximately 30,000 guerrillas who are active. Lacking proper arms, mechanized units, or air support, they have been forced to operate in small bands, harassing the enemy by every means at their disposal. Many a supply and troop train, destined to reinforce Marshal Rommel in Africa, was derailed by these guerrillas and sent to the bottom of some ravine in Greece. These small groups have recently been joined together under a centralized command in constant touch with Middle East headquarters, and they may be counted upon to render signal assistance to the Allied forces when the time of invasion comes.

*Recent dispatches state that paratroops of the Sacred Battalion have landed as reinforcements on Samos Islands.

CAMOUFLAGE

For Armored Forces

TO each fighting man, camouflage means just one thing: a way to stay alive, to live, to shoot and to kill.

The soldier needs to forget such pedantic phrases as, "If you want to come back alive, practice camouflage," and "Camouflage is the greatest insurance a soldier can have to stay healthy." That type of non-aggressive attitude is not going to win. It is not going to kill Germans or Japs. The soldier's job is to kill the enemy—not hide from him—to kill him with every weapon at his disposal; and the man is a fool who disregards the deadliest weapon of all—*surprise!* This is the weapon that camouflage gives the soldier and *against which it protects him.*

What is Camouflage?

Camouflage must be thought of as any aggressive form of deception that will enable the soldier to approach within killing distance of the enemy. It is any means of disguise that will mislead the enemy regarding position, strength, and intention—that will confuse him so that he will waste his blows and fall into ambush.

Camouflage is not an insurance against death. It is an *assurance* for having the maximum striking power, whenever and wherever it is needed. In nature, many of the smaller creatures are camouflaged against aggression, but the tiger and the leopard are camouflaged for aggression. That is the camouflage for the soldier—an aggressive action designed to liquidate the enemy!

There is a tendency to think of camouflage as highly specialized work done only by experts who are called upon to make conspicuous objects disappear by some magic known only to them, rather than as the simple, common sense precautions which any soldier can take. Concealment of large installations in the rear areas, such as airdromes, factories, and munitions plants, does require specialized training; that side of camouflage can be left to the specialists. The concealment of troops and equipment in the field requires no camouflage expert—no artist skilled in color theory and manipulation—but rather a practical man, who sensibly recognizes a few basic principles and applies them. Nevertheless, the problem is a terrific one.

Training Must Begin Early

The ground patterns of man's peacetime work and activities are unlike his work and activities in war. In peace, he is concerned with cultivated fields, orchards, villages, and towns. Man's major activity is restricted to the existing road nets. Few changes occur from year to year in the general appearance of the terrain.

With the advent of war, however, the army moves in and everywhere scrawls its signature on the face of the earth in the form of encampments, convoys, artillery layouts, and a bewildering maze of tracks from tanks, troops, and motor transport. (Fig. 1) All these signs are peculiar only to the army, and are easily identified. To the enemy who has been trained to read their meaning, these signs tell a whole story. The location and strength of a carelessly concealed unit and its intentions are obvious to him. This information enables the enemy to lay his plans to gain victory for himself and visit destruction upon his opponent.

These marks or signs are not necessarily great scars on the terrain, nor always a maze of tracks. They may be the apparently unnoticeable ones made every time a tank is driven or a man walks across a field of grass, or digs a prone shelter in the ground. One of the soldier's chief aims, therefore, is to hide the marks he makes, or to find ways of making them less conspicuous, or to disguise them so that they will not disclose so much valuable information to the enemy.

The German and Japanese armies have no camouflage schools as such. The art of concealment is taught to the soldier as a necessary part of his basic training. He is taught to use it not for passive defense alone, but also as a weapon of offense—as the tiger does—to creep up unseen and gain the advantage of surprise; to conceal his fighting power long enough to provide an opening for a knockout blow.

Training in camouflage must begin as early as possible, and it must continue. It is too late to learn under fire. The soldier will not have the opportunity to profit by his own mistakes there. The result of a mistake in battle is final! Obviously, then, the practice of camouflage must become instinctive, as much a part of the soldier's life as sleeping, eating, and breathing—as powerful a weapon for him as it is for the jungle animal who *lives* and *fights* by it. So must the soldier. How is he going to make use of this powerful weapon? What are the camouflage principles to be followed?

Fundamental Principles of Camouflage

Camouflage is not difficult. Basically it is so simple as to be disappointing to one looking for an impressive bag of tricks. It's nothing more than good, plain, common sense! Camouflage measures can be simple but extremely effective.

by

Lieutenant S. Daniel Cavallero, CE

Grimly enough, however, the only test of the success of a camouflaged position is the "ordeal by fire." Only when the enemy sniper finds no target in his sights; when the antitank gunner scans the landscape in vain; when the bomber passes over without releasing his devastating load, is camouflage successful.

In modern streamlined warfare, armored combat is characterized by great mobility, fire power, armor protection, and shock action. Positions, supplies, and equipment, formerly safe because of their location far behind the lines, now are subject to swift and complete destruction by roving armored vehicles or enemy bombardment.

Camouflage technique for the fast-moving, hard-hitting armored unit can be resolved into a practice of the most basic principles and strict adherence to these principles through discipline.

In brief, camouflage can be reduced to:

1. The recognition and intelligent use of existing natural concealment.

2. Camouflage discipline—avoiding or neutralizing signs of activity that may reveal information to the enemy.

3. The disruption of characteristic outlines and shadows, and the toning down of reflective surfaces, which enable the enemy to locate and identify a position.

The motto, "Hide—then HIT!" was coined for tank destroyer units. During the closing phase of the Tunisian campaign, tank destroyers did just that, and they were death to the Axis tanks. Cleverly concealed, they caught the Axis tanks in traps and fired on them from the flanks.

The concealment task for the armored forces will vary. For troops in touch with the enemy it will be a matter of choosing a concealed position from which the mission of the moment can be accomplished, and then exercising proper camouflage discipline and the principles of scouting and patrolling. In many cases, the dominant consideration may be speed of movement and wide dispersion.

At any rate, the problem normally will be one of individual tanks or small units. It is here that the camouflage training of the individual soldier will play an important part. If he has been impressed with the thought of camouflage as the deadly fighting weapon of *surprise*, then his every move will be made with that objective in mind—to reach the enemy with all his fighting power unimpaired, and to pounce on him unawares, with the full force of a knockout blow.

Natural Concealment

Since camouflage is only a means to an end—not an end in itself—the amount of work it involves should be kept to a minimum. There will be many other duties and problems that must be handled, so simple logic makes it plain that shortcuts should be looked for.

One of the best ways to eliminate unnecessary camouflage work is to choose a good position. Fifty to one hundred per cent concealment can be obtained some-

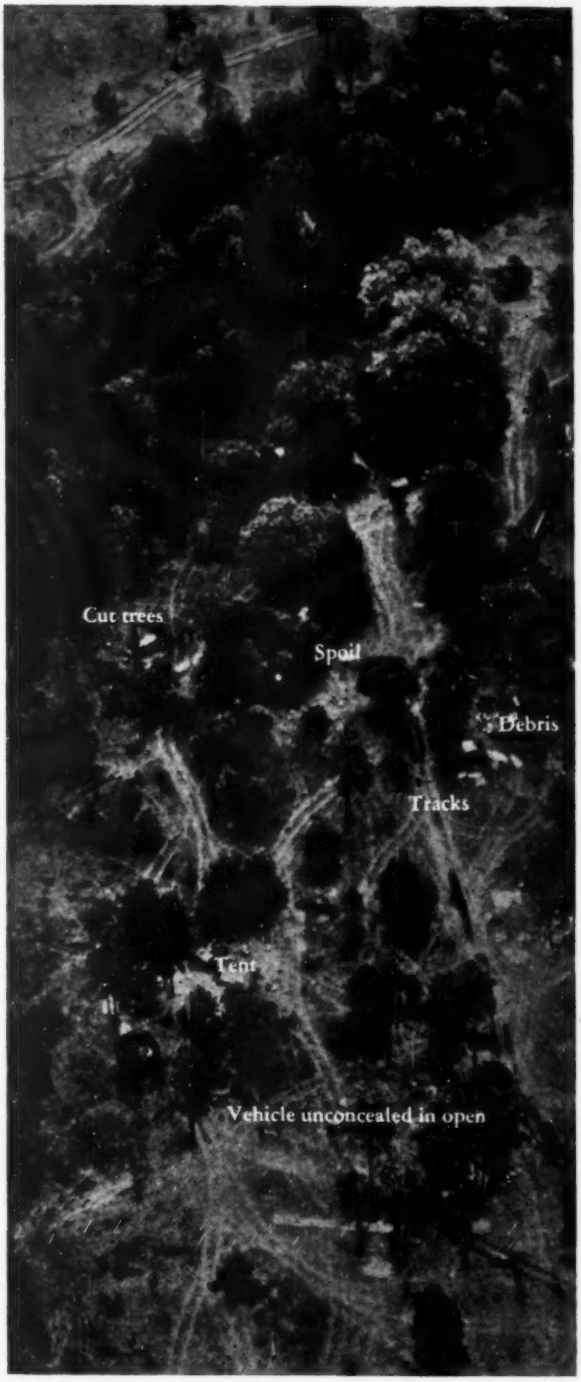


Fig. 1. Signs of military activity often give away valuable clues to the existence of an installation. Some typical examples of revealing traces are shown above. Tank tracks are different than those of other vehicles, hence, the presence of an armored unit in an area may be determined by these tell-tale traces alone.

times merely by choosing a location with plenty of natural concealment and shadow, or by cleverly blending with existing ground patterns.

Artificial materials, such as drapes and field expedients, should be used only when there is no natural concealment, or too little. When concealment is unavailable, siting a vehicle on a line of a terrain feature will make it much more difficult to pick up from the air. (Fig. 2) If that same vehicle is placed several feet away from that line, which may be a hedge, the side of a road, or only the line between two types of fields, it is an object separate from that line, and is distinguishable from it. On the other hand, parking it on the line or touching it, makes it a part of that line and therefore less noticeable.

Since the basis of concealment is the constant use of the background, the aim is to match that background in pattern, color, and texture. A distinctive contrast will be seen quickly.

Concealment is not only against ground, but also against air observation; hence, not only the background behind must be considered, but it must be remembered that the ground underneath is the background from the air observer's point of view. Ability to conceal involves recognition of the value of natural materials as concealment. A soldier can become so much a part of his surroundings that, although able to see and act against an enemy, his location will be unknown to him.

The regulation OD paint was too dark for the average North African terrain. For better blending, vehicles were never washed while in frontline areas. Dust and mud collected on them and, by using a little distribution of the dirt and additions of sand and mud, their color and texture were developed quite satisfactorily to match the color and approximate texture of the terrain background. Crankcase oil made a suitable binder to hold the dust and sand in place on the vehicle surfaces. The topsides of vehicles so treated should be somewhat darker than the sides. As more vegetation appears in the terrain, some of the mud and sand can be washed off in irregular patterns to give a mottled effect. It is rather amazing to see the effective vehicle camouflage obtained by these crude expedients.

Shadows

An object is recognized by its form or outline, and its shadow. Therefore, after moving into the most favorable position, the soldier's first job is to break up the outline and shadow of his tank. (Fig. 3 and 4.) This may be done quickly by placing natural material about

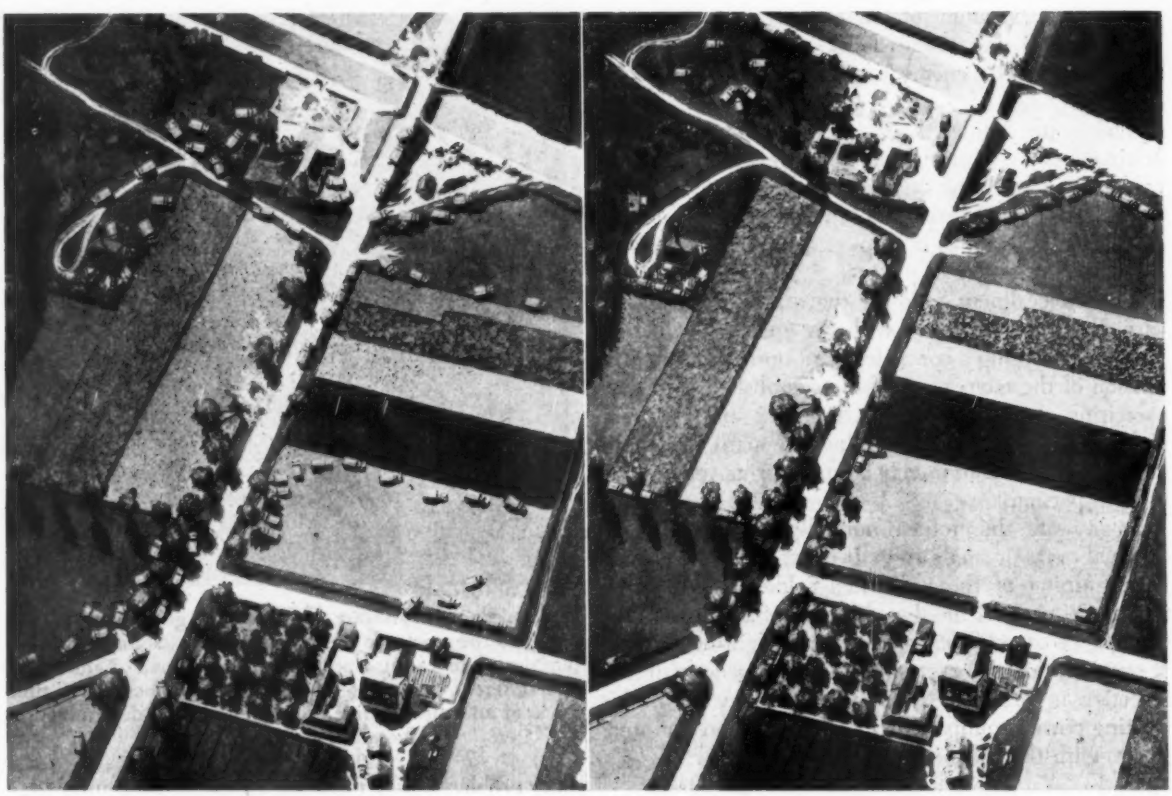


Fig. 2. In the picture on the left, shadows, regular spacing, and careless parking reveal the positions of 67 vehicles in the above illustration. The picture on the right tells the story of what careful parking and elimination of shadows mean. How many vehicles can you find now? This area is short on wooded terrain but long on line. Lines are the elements in terrain which must not be tampered with, but which offer a refuge in seemingly open terrain.

Fig. 3 and 4. Before and after. Outline, shadow, and reflections are broken up and concealed with natural materials.

and on the vehicle, with care not to mass it too heavily. It is the work of a moment, yet it may be the difference between the accomplishment of a mission or an end in smoking ruins!

Shadows can be either friends or enemies. With proper use, they will help to conceal; but also they can be a dead give-away.

The shadow of an object is very noticeable, particularly on aerial photographs; therefore, the object may be located by the contrast of its shadow on the ground, and identified for what it is by the shape of its shadow. In many cases, the object itself may be so well toned down in the proper color that it is practically invisible, but its cast shadow reveals its characteristic form. (Fig. 5.) That is all that the enemy airman needs.

On the other hand, the natural shadows of trees, houses, scrub growth, hedges, sand dunes, rock outcroppings, etc., found in the terrain can be used to excellent advantage for concealment. An object in shadow is more likely to be overlooked.

If a tank is parked on the shady side of a large tree (Fig. 6), the shadow of the tank is lost in the shadow of the tree. When the shadow moves, the tank must be moved with it!

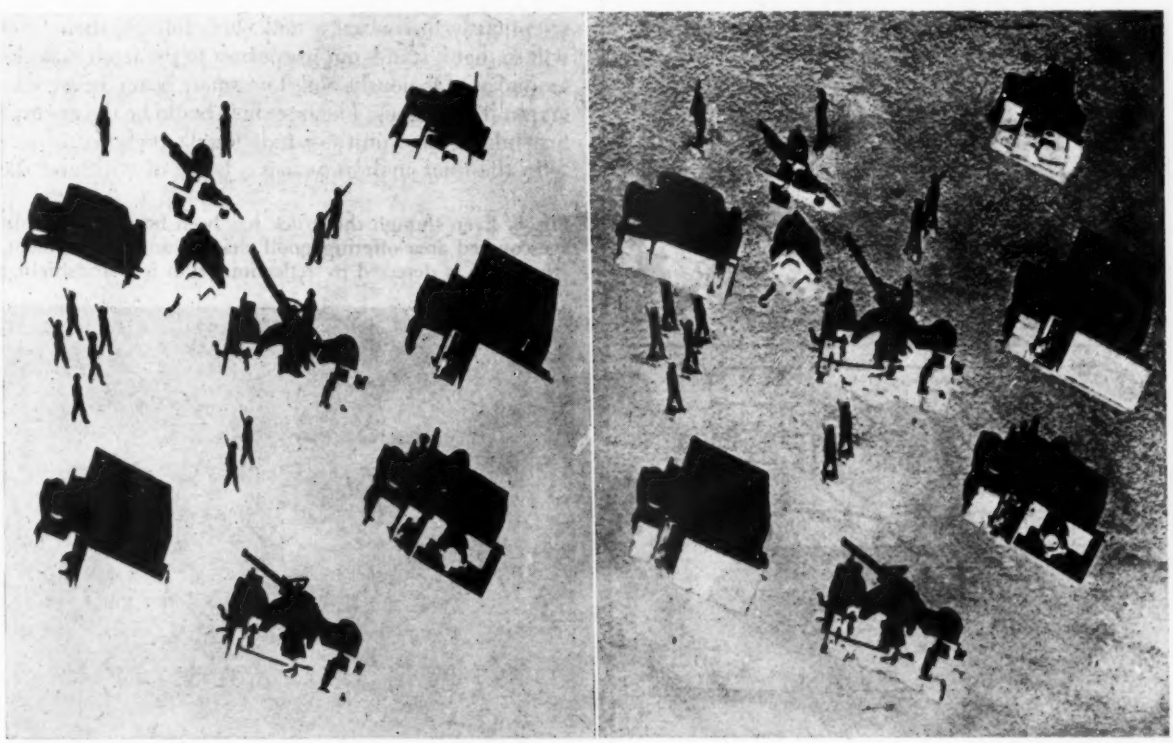


Fig. 5. Not only are the shadows themselves conspicuous, but from their shape one can identify the smallest object. The left half of this picture shows a group of military objects with their shadows. On the right, the objects themselves have been removed and only the shadows remain. These shadows give the enemy desired information.

If nothing but scrub growth lower than the tank is present, the tank should be parked on the sunny side so that its shadow falls upon the scrub growth and is distorted by it. (Fig. 7.) This at least makes the vehicle less conspicuous. In desert terrain the shady sides of sand dunes, wadis, and rock outcroppings offer a measure of concealment sometimes unrecognized.

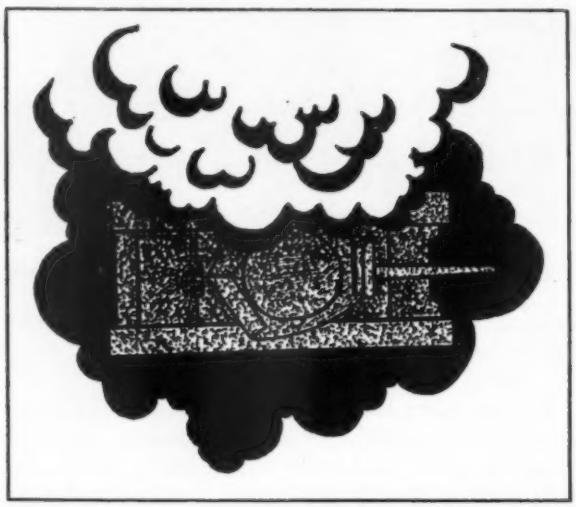


Fig. 6. Vehicle parked on the shady side of a large tree is lost in its shadow. Move the tank with the shadow!

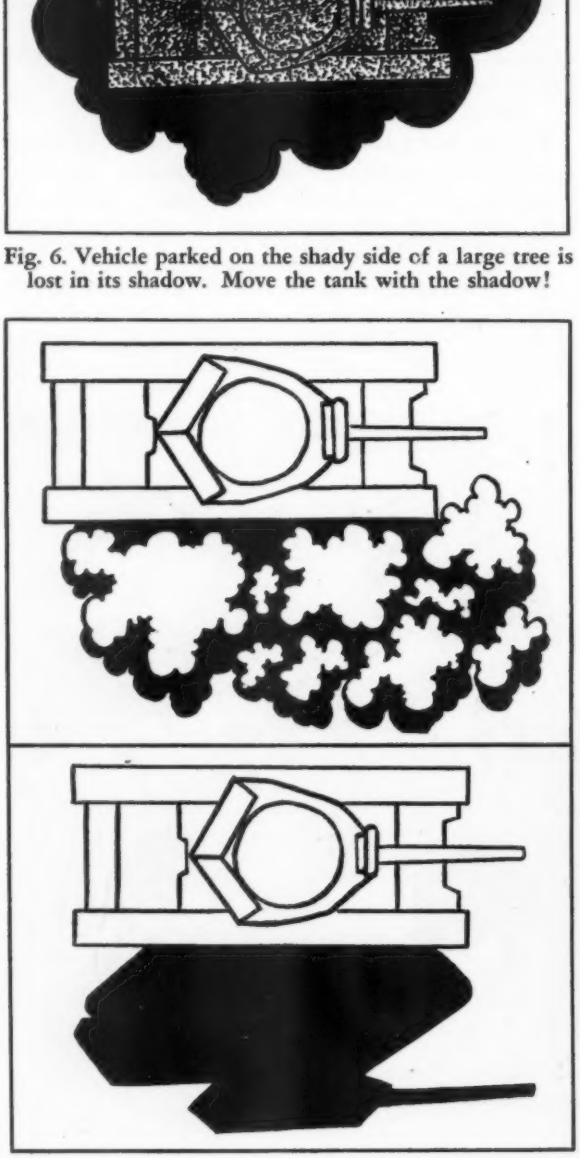


Fig. 7. Compare the parking of these two tanks. Scrub growth distorts shadows and aids concealment only when the vehicle is parked on the sunny side.

Shine

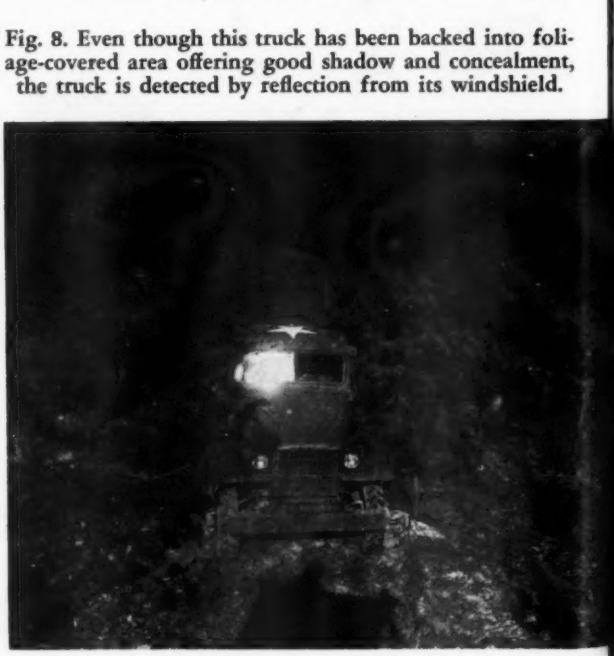
The enemy is looking for little mistakes. He knows what he is looking for, because he makes errors too. The windshield of a truck, the headlights, and the various surfaces of the vehicle—because of their smoothness and regardless of their color—can cause a shine that can be seen for a considerable distance from the air. An old piece of burlap, an army blanket, a shelter half, a jacket, or any natural material should cover loosely the reflecting points. This should be done even when a drape is being used. It is a simple measure but one which, if neglected, can nullify all other concealment measures. One quick flash and the enemy observer has spotted his target. (Fig. 8.)

Camouflage Discipline

The term "camouflage discipline," one of the most important of the fundamentals, might be expressed "camouflage—by behavior!" It means simply this: A unit must take care not to change the appearance of the surrounding terrain in such a way that signs of activity are relayed to the hostile observer. Is it good sense to maneuver into an excellent fighting position, in the hope of catching the enemy off guard, and leave a definite track leading to the new location—or conscientiously to conceal a tank with foliage, then let it wilt so that it stands out in contrast to the fresh material around it? Obviously not! The smart boxer never telegraphs his punches. The first shot should be the enemy's first inkling of a unit's or individual's presence.

In the final analysis, war is a battle of wits, and the

Fig. 8. Even though this truck has been backed into foliage-covered area offering good shadow and concealment, the truck is detected by reflection from its windshield.



loser gets few second chances. A new path across a field; an old road which, over the course of a few days, suddenly becomes wider—these are signs that tell the enemy observer a whole story. He is trained to read the meaning of such signs, and within a few hours he may be sending his respects in the form of high explosive bombs or shells!

If tracks are on hard ground, sometimes they can be brushed out by dragging branches back and forth over them, or leaves and grass can be scattered over them. (Fig. 9.) Tracks on soft ground, however, are difficult to eliminate. The necessity for a controlled track plan is obvious. Several tanks in single file leave only one set of tracks, whereas the same number of tanks, unless directed properly, can leave individual sets of tracks. By the time a whole patrol has moved in, the appearance of the ground has been so changed that nothing can restore it. (Fig. 10.) Each tank should follow the one ahead—using its footsteps, so to speak—and cut off sharply into concealment. Not all tracks can be concealed, but they certainly can be minimized.

By following the natural lines of terrain features—along hedges, fence lines, the edges of woods and fields—tracks can be blended into those natural lines and be made quite inconspicuous. Tracks which cannot be so concealed should continue past the position to an existing road or other logical terminus. (Fig. 11.) Planning of traffic does more toward track elimination than all subsequent efforts. Necessary tracks are *planned*; all others are avoided.

Drapes

Since certain combat elements such as tanks are particularly important to the success of attack missions, they are always sought by enemy observation. It is most important to reduce their visibility and conceal their type identity to gain a tactical advantage. This can be done effectively by intelligent selection of ground patterns, utilization of proper natural materials, net cover, and, to a certain extent, disruptive patterns.

In the absence of good overhead concealment, and when time will not permit more elaborate construction, the drape is an excellent method of concealing identity

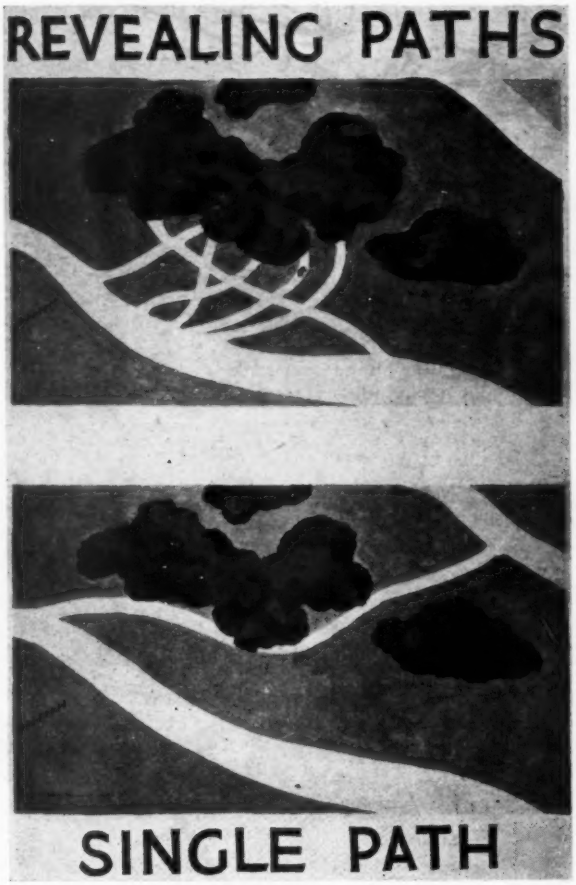


Fig. 11.

Fig. 9. Concealing tracks by covering with leaves and brush.

Fig. 10. Result of uncontrolled track plan. Ninety per cent of these tracks could have been avoided. Concealment measures following this are futile.

Fig. 12. Drape over tank in rocky, desert terrain.

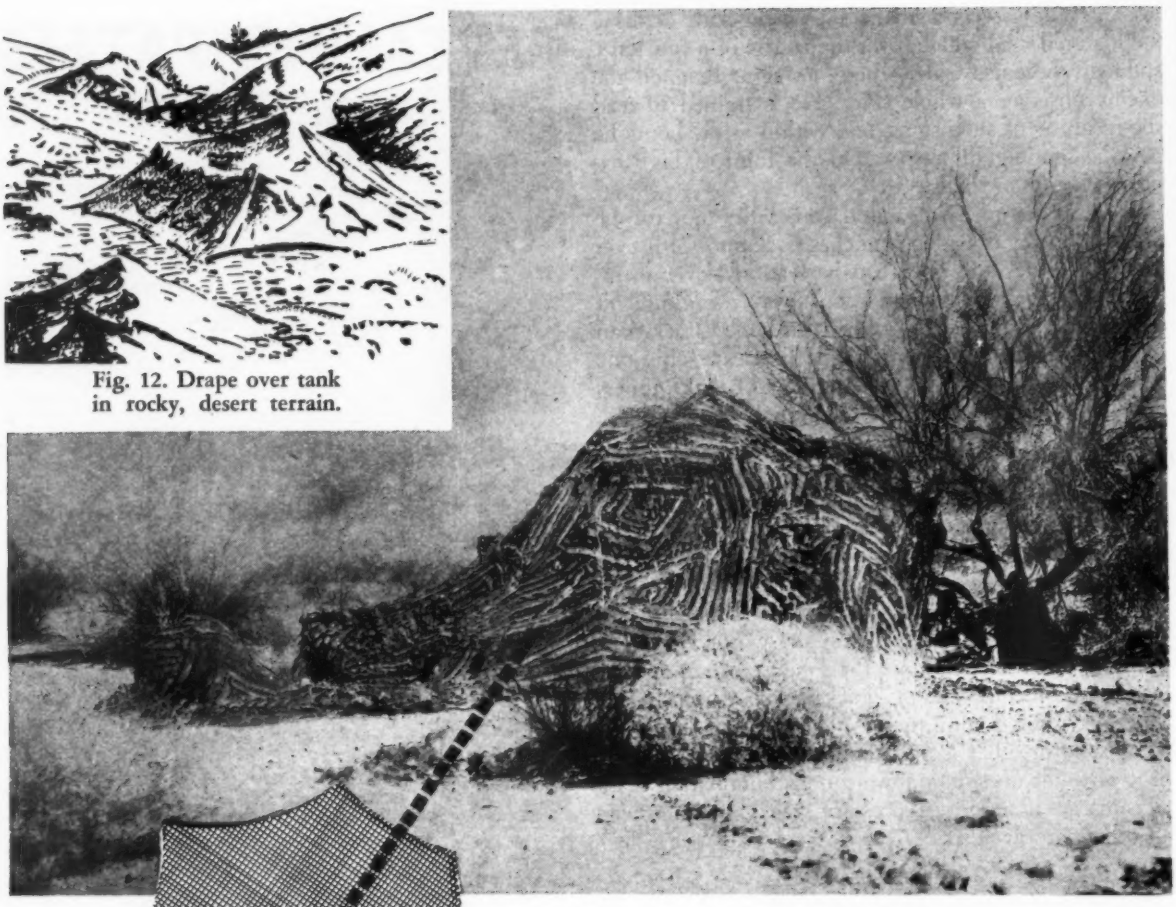


Fig. 13. Tying drape into existing terrain feature aids in better blending.

quickly (Fig. 12), if the tracks are carefully regulated to prevent their revealing the nature of the concealed tank. The standard drape is either a small mesh net, ungarnished, or a large mesh net, garnished. It must be remembered that the latter type is totally ineffective unless heavily garnished to approximately 70% coverage of the voids. Too often, the net without garnishing is considered as the proverbial "magic veil." The garnishing does the concealing. *The net itself is merely a support for the garnishing.*

The draping, however, is likely to be worthless unless a proper site is chosen. A position should be picked where the net can be related to some natural or man-made feature—bushes, or small trees, rock outcroppings, fences and houses, or even an irregular ground pattern made by soil, vegetation, or shadow changes. (Fig. 13.) Open sites such as plowed fields, clearings, or wide streets should not be used. In the presence of ruins, debris can be piled on the net for better blending, while in vegetation, foliage can be added to make the drape a part of its surroundings.

The object of using the drape is to break up the characteristic form and shadow of the vehicle. Obviously, if the drape is merely thrown over the vehicle and allowed to rest on it, the vehicle's form is unchanged and its shadow is the same as before. (Fig. 14.)

The net is held away from the surface of the object by supports, which may be saplings or poles or perhaps branches and bushes. (Fig. 15.) In the desert terrain of North Africa, tanks carried poles or boards from Arab tents to support their drapes. Thus an irregular form is presented. To minimize the shadows, the drape is drawn out and staked to the ground or held down by weights, or the edges may be thrown over low bushes.

In erection of a drape, the folded net is placed on top of the vehicle and opened out. Supports are placed, and the edges of the net are pulled outward and staked down in an *irregular pattern.*

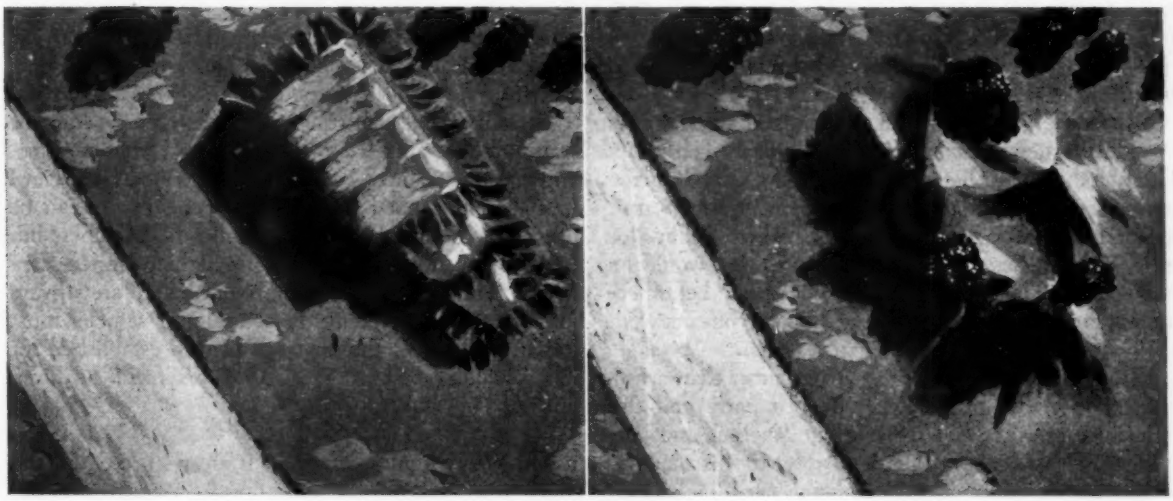


Fig. 14. Drape laid loosely over the vehicle at the left accomplishes nothing. The form and shadow are unchanged. At the right, the drape has been propped up with branches to distort vehicle outline and shadow.

Bivouac Camouflage—The 1st Armored Division in Africa

A combat unit actually spends only about ten per cent of its time in actual combat. The remainder of the time is spent in assembly areas, or in moving up to or away from the front.

Bivouac camouflage is an important normal activity in all combat theaters. The careless unit can either lose most of its personnel and precious equipment or keep them in fighting trim at the crucial point at the critical time.

Prior to the movements of the 1st Armored Division during the North African campaign, a preliminary advance party was always sent ahead to select the new bivouac or concentration area, and perhaps several alternate areas. This was done as soon as the division commander decided to move, usually several days prior to the actual movement. This party consisted of officer representatives from G-3, and the engineer camouflage officer. Upon completion of this phase, they returned to the division.

A day prior to the division move, the unit advance party, consisting of officer representatives from division headquarters and each unit of the division, proceeded to the selected area to reconnoiter and lay out the area for occupation. One-quarter-ton trucks were used in order to move rapidly and without attracting attention. Accompanying the group were an engineer officer and selected personnel (camouflage-trained) from the engineer component of the division, who were charged with the duty of selecting the most suitable areas for concealment and establish-

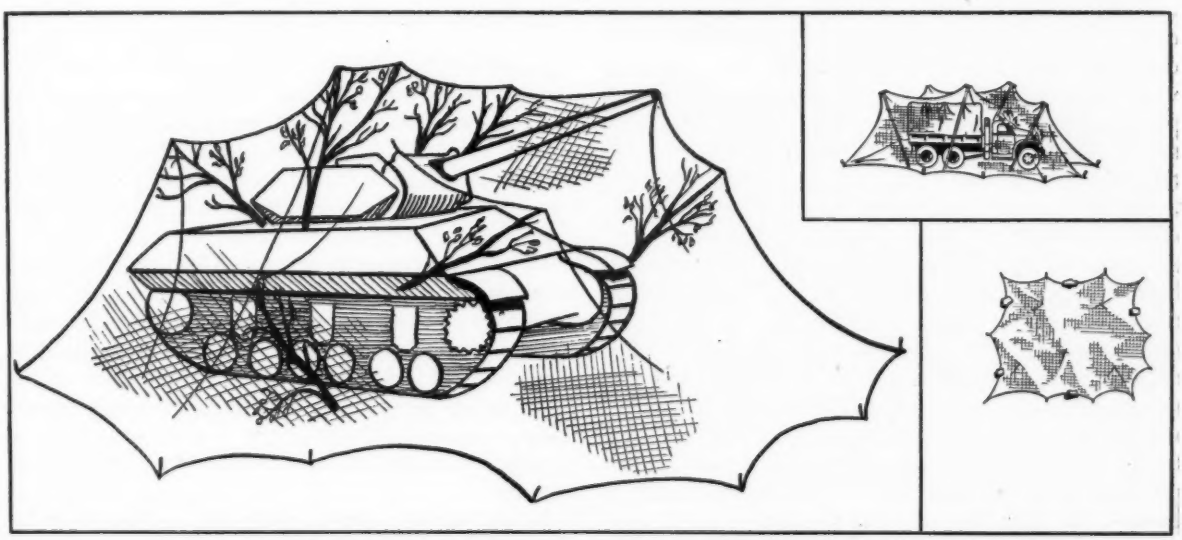


Fig. 15. Net held away from tank by brush and saplings.

ing a track plan and unit locations in the locality approved for the bivouac by the division commander.

This was the second phase, and the party remained in the area overnight.

When the division moved, it was met several miles outside the new area by the advance party personnel. Each of the party then led its respective unit into the new area in accordance with the prearranged unit location and track plan. By this method, reshuffling of units and vehicles and tracking of areas that would be impossible to obliterate, were avoided. For better coordination and greater efficiency, the same officers were always sent out in the advance parties.

If the division had to move with no more than a few hours notice, the preliminary advance party and the unit advance party would move out together and perform their tasks in the time available. It was in cases of this kind that the use of the same personnel facilitated operations the most.

In brief, the successful occupation of a bivouac area consists of three phases.

1. Preliminary reconnaissance by the advance party, and layout of the unit locations and main track plan.
2. Occupation of the area, quickly and inconspicuously, under the control of guides.
3. Rapid concealment of all personnel and equipment.

A Few Basic Rules

In a bivouac or concentration area, certain basic camouflage principles are rigidly enforced. Vehicles are always widely dispersed to take utmost advantage of natural concealment and in north latitudes they are placed on the north side of trees or other objects to obtain the maximum shadow period during the daylight hours. When natural concealment is not complete, vehicles are dug in as much as possible, the extent depending upon the type of vehicle, cover, and time available. If nets are necessary, they are placed and draped immediately. Each driver and assistant driver, or tank crew, is directly responsible for carrying out these basic camouflage practices. Since movements practically always are made at night, all camouflage must be accomplished before daylight, no matter how tired the personnel. Daylight means enemy planes and observation, and it is then too late to camouflage.

When natural concealment is not complete, prone shelters are sited on the north side of available cover. All spoil is either carried away, placed under trees and bushes, covered with leaves and grass, or resodded with turf saved before digging was begun. No banks of spoil should be permitted around the edges of dug-in or shelter-trench installations, since they increase the shadow effect. In sandy, sparse-cover areas, sand-stained shelter halves can be placed flat over prone-shelter trenches to decrease shadows and provide protection for personnel. The edges of sand dunes or wadi (gully) banks make excellent sites for vehicles to be dug-in partially, and the sandy brown nets effectively draped. Practically no shadows result, and the installation will not be discernible even from close view. This is particularly recommended for larger vehicles which are difficult to camouflage in areas of limited overhead cover.

Personnel must not congregate; mess groups must be scattered; and all reflecting surfaces, personal clothing, and equipment must be carefully concealed from view. Laundry must not be left in the open. Tracks can be brushed out sometimes with bundles of branches, but everyone must be warned against making unnecessary tracks. They are difficult to conceal and are always sought for by the enemy. Personnel and vehicles must follow at all times the set track pattern established for the particular bivouac area. *Violators must be disciplined.*

Air Observation

The possibility of air attacks is always present at the front. Camouflage, therefore, must cover the aerial view as well as the lateral or ground view. The effectiveness and the discipline maintained in the camouflage of all units must be checked constantly. If there are any high points for observation in the locality of the installation place, an air OP should be placed there and his air observer's duties combined with camouflage check-up. He should report each evening on the day's violations of the unit's camouflage plan; also, any violations of the track plan by either personnel or vehicles. These OP's should be maintained by all units in an area of bivouac or concentration.

The unit in bivouac is especially vulnerable to enemy aerial observation and attack. Except for its security elements, its men are resting and much less on the alert than in the field of battle. Moreover, the elements of the unit are more concentrated than usual. It is at a time like this that camouflage must be at its best, and camouflage discipline must be enforced rigidly. The carelessness of *one* soldier may result in the annihilation of the entire unit or the failure of the operation.

Conclusion

In mobile situations—and today most of them are mobile—there is seldom time for elaborate camouflage construction. Bivouacs are entered quickly and left quickly. Obviously, little else can be done but follow the simple yet effective rules of dispersion, siting for better concealment, use of natural material and shadows —and the establishment of a *track plan.*

Troops who have been under fire have a much keener appreciation of camouflage. They are aware that it is a very personal proposition. Stripped of all its supposed mystery, it is at the same time a means of approaching within killing distance of the enemy, and a matter of self-preservation; a method of saving precious equipment and supplies from destruction, and of bluffing the enemy as to the unit's strength and intentions.

To the weapons that a soldier already has, he must add another—*surprise.*

Are You a Tank Destroyer?*

IT's great for a man's ego. It makes him feel infallible. Sit him behind the controls of a 30-ton tank and he's sure to feel powerful. "Yah! nothing can stop me." Jam it in gear. Push that accelerator down to the floor. Drop out the clutch. Feel the lurch of the tank as the tracks bite. Give it hell. Pick out the roughest, toughest obstacles. Ram right into or over them. "Nothing can hurt this vehicle—it's a tank."

Yes, it's a tank. And because it's a tank, it's subject to more mistreatment than any vehicle in the Army. It's mistreated because lots of men don't realize that a tank is made up of the same type gears, pistons, and bushings as those in any other vehicle—and need the same care.

From the toughest proving ground in the world came reports that our American tanks are as good as anything our enemy has—or better. In Libya and on the Russian front they proved that they could stand up under the worst conditions nature could provide. But even the best materials and engineering can't stand up under the murderous treatment of a careless tank driver.

You may have your own ideas on how to destroy a tank but here are a few samples of how some greenguards destroy tanks and then blame it on the materials or design.

Starting Radial Engines

Just crawl into the first radial-powered tank you see and start it up—that's all. If the tank's been sitting still for 12 or more hours it's possible for you to break the engine up as effectively as a German 88 could.

Radial engines have a number of cylinders pointing down (Fig. 1); the combustion chamber in each of these cylinders is *under* the piston (Fig. 2). While the engine isn't running, oil and gas may drain from the crankcase into the lower combustion chambers. If the engine is started *without* removing the liquids from the combustion chambers, the pistons are forced to compress the liquids just like air. But, you know that liquids can't be *compressed*. Wham, when the piston hits the oil and gas, something has to give—and it's usually the piston or the cylinder head.

To prevent this tank-busting, a seasoned tank driver will crank the engine by turning the hand crank over 50 times before starting it (if the tank has not been run overnight). Cranking the engine forces the pistons to go through the exhaust strokes which pump the liquids out of the combustion chambers. If you have trouble cranking, you may have to remove the spark plugs so the liquid will have a means of escaping.

If you're ever in doubt as to whether the tank has been cranked over or not, don't take a chance—crank it.

Idling Speeds

Blowing cylinder heads apart and breaking pistons is an effective but crude way of destroying tanks. Some GI's with a more delicate touch have developed more subtle methods—idling speeds for example.

These boys stop their tanks and allow the engine to idle at 400 to 500 rpm's while they're eating their field rations or calling up Mabel. Somebody said that the smooth ticking of the engine aids their digestion. But this fine, smooth idling of the engine is the calm before the storm. Prolonged low idling speeds on radial engines cause extremely high temperatures in the cylinder walls and low temperatures in the spark plugs. Also, there's very little oil circulation. First thing you'll notice is misfiring and smoking, caused by fouled plugs. Later as the oil on the moving parts burns off—pistons and cylinders score, bearings wear and in general the engine gets shot.

Radial engines should *never be idled at less than 800 rpm*. When you have to idle an engine, set the hand throttle to run the engine at 800 rpm. The low idle

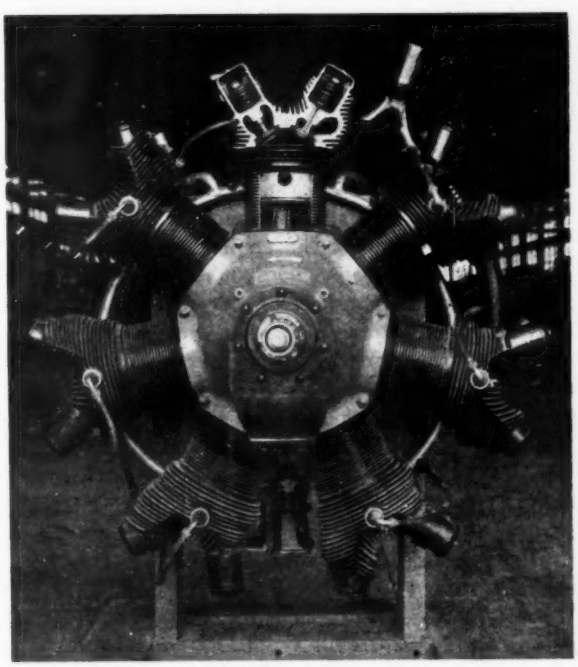


Fig. 1.—It's easy to see by this light-tank radial-engine that four of these cylinders are pointing down.

*Courtesy *Army Motors*.

If you've got to bust tanks, break up those Nazi Mark VI's — not your own M4's.

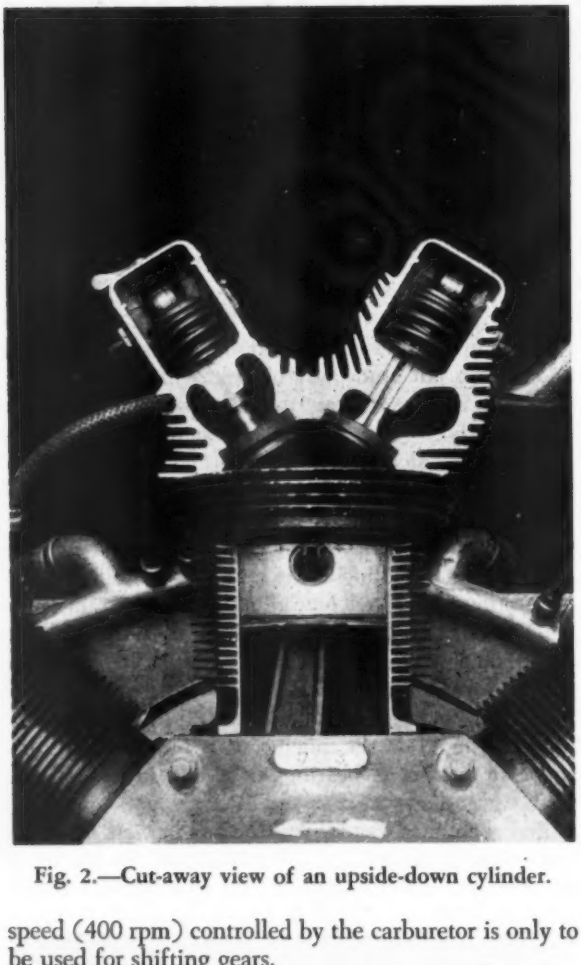


Fig. 2.—Cut-away view of an upside-down cylinder.

speed (400 rpm) controlled by the carburetor is only to be used for shifting gears.

Diesel engines are also damaged by low idling speeds. If you have to idle them, set the hand throttles to idle both engines over 600 rpm.

And while we're on the subject of engine speeds, another way to finish off a good engine is to "lug" it. Lugging a tank means to continue driving it in a high gear after the speed of the engine has slowed down. This generally happens when you're driving in a high gear over smooth terrain and suddenly go into heavy mud or up an abrupt hill. Some greenguards do the same thing by slowing the engine speed in order to slow the tank speed. When the engine rpm's drop, the engine can't develop enough torque (twisting force) to keep the tank moving. The engine loses speed rapidly. You can almost hear each cylinder firing individually. During this time the engine is knocking itself apart, the pistons vibrate in the cylinders, power is applied in jerks, the tank shivers, shakes and gasps. Plenty of parts are being ruined while all this is going on.

A good driver *never* allows the terrain or tank speed to slow up the engine rpm's. He shifts to a lower gear as soon as the tank slows up or if he wants to reduce the tank's speed.

Radial engines, especially, are mutilated by low engine speeds. These engines were designed to run for long periods between 1800 and 2200 rpm. For short periods, they can be run at 1500 rpm. When operated at these speeds they'll give very little trouble. But lug a radial-powered tank along in 3rd, 4th or 5th gear at 1200 or 1300 rpm, and you'll have to change engines at 50 hours.

A good thing to remember is this: whenever you're in a gear higher than 2nd, no matter how slow the tank has to travel, your engine speed *must be kept above 1500 rpm.* If this causes the tank to travel too fast, shift to a lower gear. *Don't ease up on the throttle!*

Overspeeding

Gunning a tank too much is bad business too. Every tank has a top governed engine speed, which is the greatest number of rpm's it can stand in prolonged operation. For short runs it can take a little more, but not much. See your manual for details.

We won't go into the methods of getting the rpm's to exceed the legal limit, but we've seen it happen, and you probably have too. Some guy roars his engine like a bat out of Hell—then it starts to cough and sputter, won't run smoothly. It's suffering from "valve surge," which means the valves can't keep in step with the rapid cam action and therefore go into a fluttering motion of their own. At first there's no permanent harm, but after a while the valve lock washers give up all hope of controlling the crazy valve action; they break and drop the valves into the cylinders. After a piston has beat on a valve a couple of times, you'll have a cylinder full of first-class scrap.

If this doesn't happen first, chances are the engine will overheat, and you know what *that* means—the lube

Fig. 3.—This guy defied the law of gravity—but he broke his rear idler housing doing it.

film in the engine breaks down, and you get scored pistons or bearing failure.

Overspeeding is especially apt to happen when going downhill. Don't forget you have brakes to take a load off your engine. Maybe it would be a good idea to dig out the June *Army Motors* from the bottom of that pile of *Breezy Stories* and read the article on "Give Your Tank a Brake."

Climbing Hills

Even our tanks have limitations and a good tank driver learns them. While watching a tankman putting his medium tank through its paces, we saw a rear idler housing sheared off neatly as if it were done with a cutting torch.

All this driver did was to try to climb the tank over an abrupt hill. But not knowing the right way to handle such a hill, he didn't get over it—but he did put his tank out of operation.

Here's how:

He approached the hill at a sharp angle with the tank transmission in third gear. When the tank hit the soft stuff at the base of the hill it lost speed. By the time the nose of the tank found its way up on the hill (Fig. 3), there was too much load on the engine. It stalled.

Next, the driver started the engine, shifted to creeper gear (1st gear), braked the left track to straighten up and gave her the gun.

Here's what happened:

In trying to run the tank up the hill at an angle the driver was forcing the right track to do all the work. The engine itself develops enough torque in 1st gear to pull the tank up such a hill, but in this case the torque is not applied equally to both tracks. It's being applied mostly to the right track.

Fig. 4.—This tank could have licked a dozen Nazi tanks —but one careless driver put it out of action.

Naturally, this pull centered on the right idler housing, and because the housing was never designed to take all the torque necessary to pull 30 tons up a steep grade —it broke (Fig. 4).

Had the driver known his tank thoroughly, he would have charged up the hill at an angle which would allow both his tracks to take part of the load. But, if by chance he found himself in the position shown in Figure 3, a good tank driver would have backed the tank down and changed direction before trying to go over the hill.

A tank is big, all right—and it weighs plenty—and you can knock over a house with one. Just remember, though, that it needs loving care and lots of it.

Baby yours.

Cavalry Journal Prisoner of War Fund

An unsolicited donation of $197.19, to be used for prisoners of war, has been received from the 3d Cavalry (Mecz.), commanded by Colonel F. W. Drury. This sum, which has now become the nucleus for *The Cavalry Journal Prisoner of War Fund*, has been turned over to the proper authorities for immediate use.

American Red Cross packages recently carried by the *Gripsholm* to prisoners of war held by Japan contained the following items:

4 handkerchiefs, 3 hand towels, 1 wash cloth, 1 comb, 12 safety pins, 4 cakes of soap, 2 toothbrushes, 1 4-oz. container of tooth powder, 1 chess, checker, and Chinese checker set, 2 pencils, ½ lb. cheese, ½ lb. malted milk, 1 lb. prunes, 1 lb. raisins, 100 army formula vitamin tablets, 1 polo shirt, 2 prs. socks, 1 steel mirror, 4 packages of double-edged razor blades, 1 shaving brush, 1 stick of shaving cream.

In many cases, the Red Cross is allowed to act as "next of kin" to prisoners and internees. The *Prisoners of War Bulletin* for November reports:

". . . the Red Cross was able to complete the work (for the *Gripsholm*) on time, and even to include in the 2,892 adopted prisoners and internees, several hundred previously unreported prisoners of war in the Philippines whose names were obtained by the War Department only a few days before the loading began."

For prompt and efficient handling, send your contribution for prisoners of war direct to

The Cavalry Journal

1719 K Street, N.W. WASHINGTON 6, D. C.

Tank Radio Communication

*by Lieutenant W. E. Felty**

"TIGER 2, this is Tiger 3. Enemy AT gun located 300 yards west of Hill 34." This was the message received by the C.O. immediately after he had given the "Move Out" in his attack order to the platoon leaders.

The attack could not be halted. The enemy AT gun was waiting for the first tank to come into effective range. The C.O. quickly sent a message to the leading platoon: "Destroy AT gun, 800 yards to your left-front."

The platoon leader made a quick decision and directed his platoon sergeant: "Cover my advance to Hill 34."

Fifteen minutes elapsed between the time that the AT gun was reported and the time that it was destroyed. Had it not been for radio, the AT gun might have destroyed a tank.

Control of Tanks

Modern tanks are fast and very effective in battle—if properly controlled. This control is greatly improved by efficient use of radio communication. On the other hand, improper use of the radio by undisciplined or poorly trained operators can often result in serious errors and unnecessary delays in the communication system. These unnecessary limitations are usually traceable to their source, and in the majority of cases the faults go back to the training of operators—many times, as far back as the first class in basic radio procedure.

Much of the malfunctioning of radio communication is caused by (1) the tank commander who, because he is poorly trained in radio telephone procedure, invariably throws the net into confusion; (2) the one who does not know the phonetic alphabet and consequently pronounces a difficult word so that it cannot be understood by those concerned; (3) the man who speaks too fast and must repeat a number of times; (4) the one who tries to give commands to his driver without realizing that he is on "Radio" instead of "Interphone," and "cuts in" on a station sending an important message; (5) and the two who are just "chewing the fat."

Thorough training is often lacking where it is most needed—within the company and platoon. A regimental, battalion, or even company commander may not be concerned directly with the message, "Jones, (Section Leader) cover my advance to that ridge," nor will it necessarily change the plan of attack just because Jones, whose radio was on the wrong channel, failed to cover the platoon leader's advance. But it may have *unnecessarily* caused the loss of two tanks.

In the final analysis, the success of the higher unit must depend on the effective employment of its subordinate units. It should be borne in mind, therefore, that each subordinate unit must have carefully supervised training in radio operation and radio telephone procedure.

Radio personnel in battalion, regimental, and higher headquarters are usually highly trained specialists and are picked for such jobs because they are experts at this work. In the company and platoon it is different. The tank commander, in addition to his other duties, is the radio operator. As such, he is responsible for seeing that the message sent from his radio is in the prescribed form, that words are clearly spoken, the message complete, and that the station to which it is sent receives it. In order to be capable of carrying this responsibility, the tank commander must have thorough training and practice in radio communication.

Training

In the Army, an individual's ability to accomplish his work efficiently is usually based upon his initial or basic training. There is no exception to this regarding radio operators. If the initial training is thorough, the operators will be fast and accurate in their work. On the other hand, if a high standard of efficiency in the initial training is not maintained and classes in procedure are few and far between, the unit commander will not have the efficient radio communication that is so vital to that unit in the stress of battle.

During their first basic class, students should be made to realize the important rôle of radio telephone communication and the vital necessity of learning and following proper procedure. In subsequent classes, they should spend many hours training, drilling, and practicing under the tutelage of competent instructors and assistants.

Training in radio communication should include (1) basic classroom radio telephone procedure, (2) complete instruction in the use of the radio set to be used, (3) advanced training in radio telephone procedure, and (4) complete training in the performance of 1st Echelon of Maintenance. None of these should have training priority over the other as they are all of equal importance.

Basic Classroom Procedure

Basic classroom procedure is usually the hardest to instill.

Although radio is generally regarded as a subject requiring the skill of experts, student radio operators should be taught in the beginning that their responsibilities in handling radio procedure do not involve long formulae and intricate theories. Operators need know only the purpose of a few controls on the radio set and a few procedure phrases. ***But this knowledge***

*748th Tank Battalion (M) (SP).

must be exact. It is much worse to use a procedure phrase incorrectly than not to use it at all.

Each classroom should have a blackboard available so that adequate illustrations can be given of each item in radio telephone procedure. After students have learned the basic procedure, they should be drilled by having them write it on the board. An even better training practice is to have four or five students stand in front of the class and call words as if they were using a radio net. Other students then have the opportunity of correcting mistakes. Constant drilling in this practice-method will train the student to think of what he is going to say before he starts talking. It will save a lot of time as well as damage to radio sets, when the class reaches a more advanced stage. New men on the radio often have a tendency to forget what to say after the transmitter is turned on. This blocks the air and may also cause damage to the radio equipment.

Instructions in Use of Radio Set

Before a tank driver is proficient he must know the tank—its capabilities, limitations, all necessary driving regulations, etc. Likewise, the radio operator must have a thorough knowledge of the radio and its controls in order to get the most efficient use of his set.

From the viewpoint of the operator, the radio sets used in tanks today are simple. They require no knowledge of their complicated interior.

Advanced Training

Just as the tank driver must have much practice in driving a tank, the radio operator must have continued practice in radio operation and procedure.

Throughout all instruction and practice, the student operator should be taught to use uptodate procedure consistent with current regulations. Many difficulties arise from the use, by some operator, of his own procedure or some obsolete procedure. Neither of these is ever understood by the new man who is familiar only with prescribed regulations. This causes loss of much valuable time and achieves nothing but confusion on the radio net. Men must be taught to realize this early in their training period.

During the advanced training phase, radio nets should be monitored occasionally in order to ascertain that the proper procedure is being used, and that operators are not getting into bad habits of making ground rules and short cuts in the use of procedure.

If time permits, it is also advisable to have practice nets in radio procedure. These should emphasize the use of all items of procedure that have been taught, in order to keep the men from forgetting certain parts, which they may have had little or no occasion to use during the normal course of training in other duties.

1st Echelon of Maintenance

Nothing will continue to function properly if it is not maintained. The radio set employed in the tank is a delicate piece of equipment, necessary to the fighting efficiency of the whole tank crew. Tank commanders, therefore, should perform a 1st Echelon check on the radio each time that they check the tank and other equipment. If the set needs repairs, the repairman should be so informed. A routine check in itself, however, is not sufficient. The tank commander must also have enough knowledge of the radio set and how it works to make an accurate report on the failure of any radio equipment.

Summary

In order to have fast and effective use of tanks, it is first necessary to have fast and efficient radio communication. In order to have this there are but a few necessary rules to follow:

1. A definite plan for the training of tank commanders as radio operators will increase radio efficiency.
2. None but authorized procedure should ever be used on a radio net.
3. Frequent practice nets are valuable aids in training.
4. Well planned 1st Echelon of Maintenance is necessary.

Report on German Radio Equipment

by U. S. Signal Corps Officer, back from Africa

German radio equipment is "five years behind our own." This inferiority in design, components and construction appears to be due to the fact that the Germans standardized their radio apparatus during 1934-1938 and have not attempted further improvements.

"German sets are well built and have a great deal of strength, but those tested in Africa were certainly not made for service there. They lacked waterproofing and were not dustproofed. In many cases, stop-gap measures were used. For instance, we have noticed that tape and various sealing compounds were used in an attempt to make sets resistant to corrosion and to exclude dust. An obvious fault was the lack of impregnation of coils and transformers to keep out moisture."

Although fairly good operators, German signal prisoners do not appear to be very well trained on technical lines.

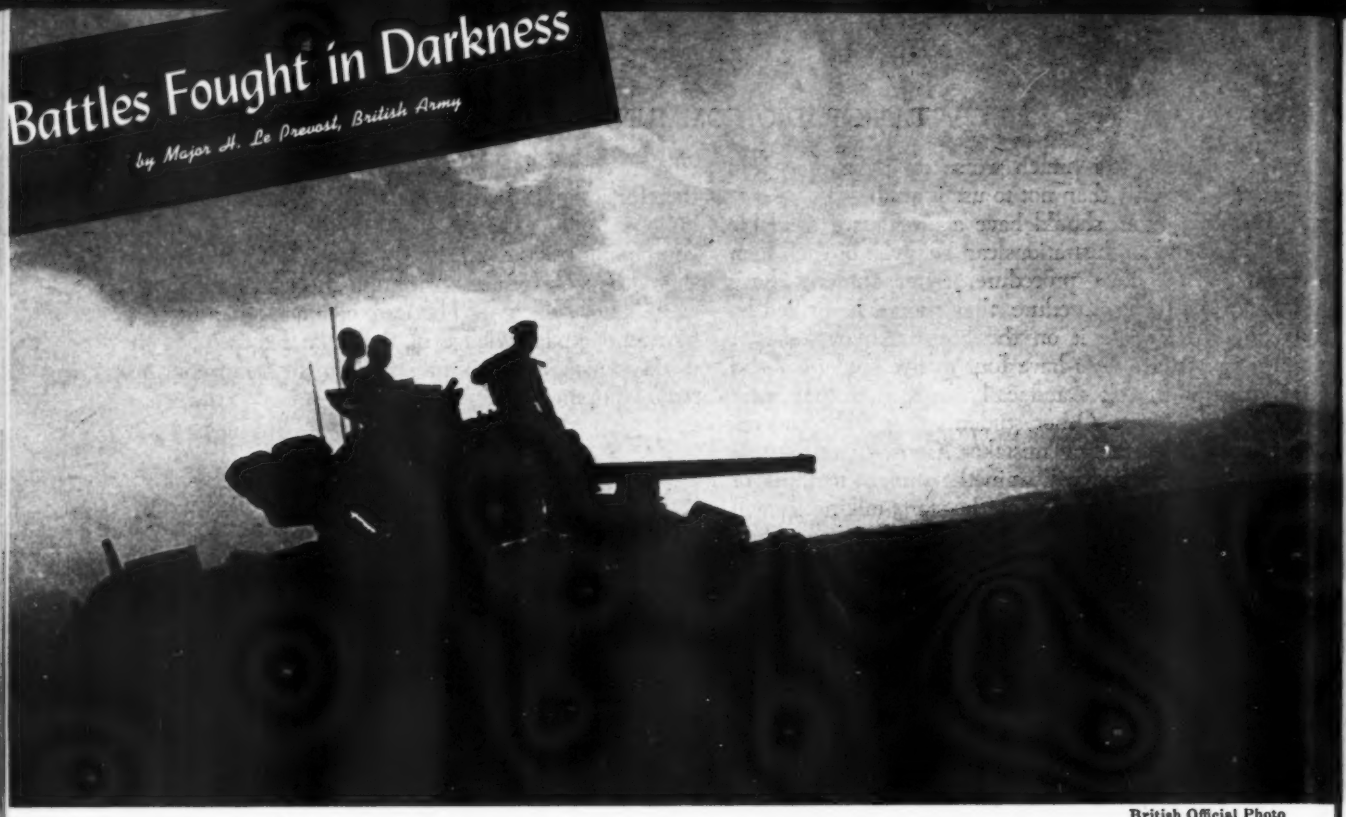
"In many cases, German radio sets have been found intentionally sealed to prevent tampering so that German operators could not attempt their own repairs. 'Yankee ingenuity,' on the other hand, makes it possible for American boys to repair or improvise their own equipment if they have the tools and parts."

Captured damaged enemy equipment is "cannibalized" for coils, condensers, resistors, tubes, batteries and meters. These are used to repair U. S. equipment, and also enemy apparatus to be used by the Allies.

United States forces have not yet had to resort to use of captured equipment.—*Bureau of Public Relations, War Department.*

Battles Fought in Darkness

by Major H. Le Prevost, British Army



British Official Photo

At sunset, British tanks in Sicily move up to new positions north of Rammacca.

DECISIVE battles in this world war will probably be fought in the dark. That is the text for modern armies, according to the military gospel of General Montgomery who, while training troops in Britain, always insisted that great results could be achieved in night fighting by troops rightly and adequately trained. And at El Alamein he proved it.

In World War I the general scheme was to assemble the troops under cover of darkness, and to launch the attack at dawn. During the present war, German commanders adopted such tactics in Poland, France, Russia and Africa; and Generals Wavell and Auchinleck in the Western Desert did the same.

New weapons and new methods, such as the laying of vast minefields containing hundreds and thousands of mines have, however, multiplied the cost of a close approach in daylight to strong positions held by large numbers of fully armed, resolute troops.

Marshal Rommel at El Alamein believed that the British would not be able to penetrate the defenses he had constructed during three to four months of ceaseless work.

General Montgomery solved the problem by an immense concentration of artillery on a front four to five miles wide, which flung shells on the enemy at the rate of 1,800 tons an hour; and a thorough system of mine detection and clearance, followed by infantry night attacks.

Despite the advantage of holding prepared defenses, covered in places by minefields five to six miles deep, the Axis troops were beaten both in defense and attack. All the major British attacks were launched at night. All the enemy's chief counterattacks were attempted during the day.

Night fighting is peculiarly difficult. It calls for careful planning and careful training, for individual intelligence and strict discipline.

Commanders in the past, warned by examples in military history, as a rule have restricted their night attacks to assaults on besieged fortresses, where the ground has been familiar and the position of the breaches unmistakable. But even under the most favorable conditions, the attempt to coördinate the movements of several columns of troops has often broken down.

General Montgomery's main assault at El Alamein on October 23, 1942, was made in the north on a front six to seven miles wide. He employed four divisions. At first their common direction was east to west. Later the troops on the northern and southern flanks struck northwest and southwest to broaden the wedge they had driven into the Axis defenses.

With more than 50,000 troops moving at night across monotonous desert on different lines of march towards different objectives, the risks of confusion were great. Any unit might easily go astray, and for the success of the operation, every movement had to be coördinated with all the rest. Each unit had to know its own position and the positions of its neighbor units. This knowledge also embraced the air force, the artillery and the engineers.

Thanks to the tireless sorties of Britain's R.A.F. and the excellence of their innumerable photographs, together with daring and persistent ground raids by all

British formations, the attacking troops knew the exact position of the enemy's guns and defended localities.

Throughout the eleven days' struggle at El Alamein, General Montgomery never interrupted his plan of night attack. Despite all the risks of confusion, he was never held up by the dark; and, attacking in the dark an enemy whose numbers were little less than his own, he inflicted four times the casualties that he suffered.

Two means to Montgomery's success were (1) the thorough training of all ranks in night movements, and (2) the selection and instruction of pace counters in every unit.

Finding the way in the dark is partly an innate gift and partly an acquired skill. Some men are hopelessly bewildered in the dark. They are even confused by a strange countryside in daylight, and such men cannot be taught.

While only a few men seem to possess that remarkable sense of locality which enables them to find their way in the dark as if by instinct, the large majority have an aptitude, more or less pronounced, that is capable of surprising development.

Much attention is given to fieldcraft in the training of Britain's new Army. Men learn to find their way about in all kinds of country, in all kinds of weather, and at all hours of the day and night. Once the puzzles of map reading have been mastered, and the habit formed of noting natural signs and features, and making mental pictures, the dark dwindles from an impenetrable obstacle to a mere hindrance. In the Western Desert, the brilliant stars act as sign posts in the sky.

The ordinary Briton is seldom given to watching the night sky. In the Middle East he has discovered that some attention to its pattern will show him the points of the compass and tell him the hour.

Montgomery's defeat of Rommel demonstrated that unless a general is prepared to forego large and perhaps decisive advantages, he must often move and attack in the dark. With this conclusion, a new theory in military tactics is born.

Something much nearer than the stars, however, was required at El Alamein to guide Britain's Eighth Army, and keep its different parts in position. This was provided by an ingenious and elaborate system of light.

The first stage in the advance was the clearing of gaps in the minefields. Where each gap was to be made, an officer of the Royal Engineers had placed himself at the entrance with a telephone and wireless set. He was followed by other engineers who marked the route with colored lights. Through the minefields, troops were still helped by the use of lights to keep direction. Thus troops fighting their way forward were able to answer for themselves the question: "Where are we," and to announce: "Here we are."

A medium gun of General Montgomery's Eighth Army opens the night barrage on the Mareth Line. This was another application of the tactics that broke the enemy defenses at El Alamein.

British Official Photo

Training in Night Firing

At the Cavalry School

FIELD MANUAL 23-60, Caliber .50 Browning Machine Gun, prescribes methods of night firing which are pertinent to all small-caliber weapons. These methods are based on the registering of fire during daylight hours and the recording of pertinent data upon range cards while using sight or instrument readings and deflections relative to an aiming stake or a lighted aiming box. They are sound and afford excellent training within the scope of their application.

Such methods, however, are not always feasible. They may be used only when time and the tactical situation permit prior registration of fire and the preparation of range cards. They do not cover the occupation and the hasty preparation of defensive positions at night, where effective fire may be required without prior registration on the target. This type of action can be expected to be used frequently in every theater of operations. The registering of weapons in a defensive position indicates to an observing enemy the location of the position. If alternate defensive positions can be occupied and an effective fire delivered without prior registration, the defense will gain an element of surprise that may well prove decisive.

Setting Up the "Flasher" System

To provide training applicable to these latter situations, the Cavalry School has developed a training aid which simulates an enemy night attack. This is achieved by a flasher system of vari-colored lights representing the muzzle flashes of hostile weapons.

Twenty-four lights are installed in the firing area. Each light is controlled from behind the firing positions by switches. White lights flashing at the rate of 30 flashes per minute simulate rifle fire, while red lights flashing at the rate of 100 per minute represent enemy machine-gun support. To represent mortar targets in a certain area, blue lights are placed in the extreme corners of the area indicating enemy reserve or support troops. Amber or yellow lights represent enemy mechanized vehicles or tanks.

The flasher proper consists of two rectified and filtered power supplies, two vacuum tube flasher circuits, and a control panel. The source of electrical power is a generator on a sound truck. Each flasher circuit consists of a vacuum tube, a relay, and a time-circuit. The time-circuit consists of a condenser and two resistors, one charge and one discharge. The rate of flash is controlled by the value of the resistors, with the time "on" relative to the time "off" being dependent upon the proportionate value of the charge and discharge resistors. The flasher used at the Cavalry School was constructed from salvaged parts and material from junked radio sets. If salvage is not available, all parts may be purchased commercially.

Four conductors are brought from the flasher unit to a switchboard. These conductors are: one common, one slow flasher, one fast flasher, and one continuously hot lead. The switchboard consists of a panel containing as many switches as there are targets that are to be controlled.

The flasher lights are controlled by one operator at the control switchboard located just in the rear of the firing line. The operator begins by closing switches on slow flasher circuits whose lights are closest to the firing position to simulate an enemy skirmish line fire. At an appropriate time, lights representing enemy machine-gun support are operated. For a diagrammatic sketch of the wiring system, see Figure 1. This figure is diagrammatic only; lights should be placed so that they represent suitable targets on particular terrain.

In addition to the lights representing the location and particular types of hostile fire, silhouette and other ground targets are placed in the immediate vicinity of the lights to correspond with the probable disposition of the hostile squads, sections, and other units. Targets are arranged to show as nearly as possible a true representation of the attacking or assaulting force. Tank and/or mechanized vehicle targets are constructed to outline the forward silhouette of the vehicle, with the amber or yellow blinker light being placed in a position on the target which corresponds to the actual position of the principal weapon on the vehicle. Lights for other targets are placed within the limits of the group, with not more than two lights per group.

Realism

To simulate hostile artillery and mortar fire, heavy explosives are placed in the immediate vicinity of the firing line prior to the conduct of the exercise. Prone shelters are started by students as soon as they reach their positions. These shelters are not fully completed during the exercise because it is not desired to devote more than the minimum time to this practice, since it is fully covered in other instruction. It must be included, however, to emphasize to the student that as soon as he moves into a position he must start preparation of individual cover.

For further emphasis, hostile artillery fire is simulated. To warn the students of the approach of enemy shells, No. 2 artillery whistle fireworks are used. (These resemble firecrackers and when lighted give off a peculiar whistling sound resembling the shrill noise of an

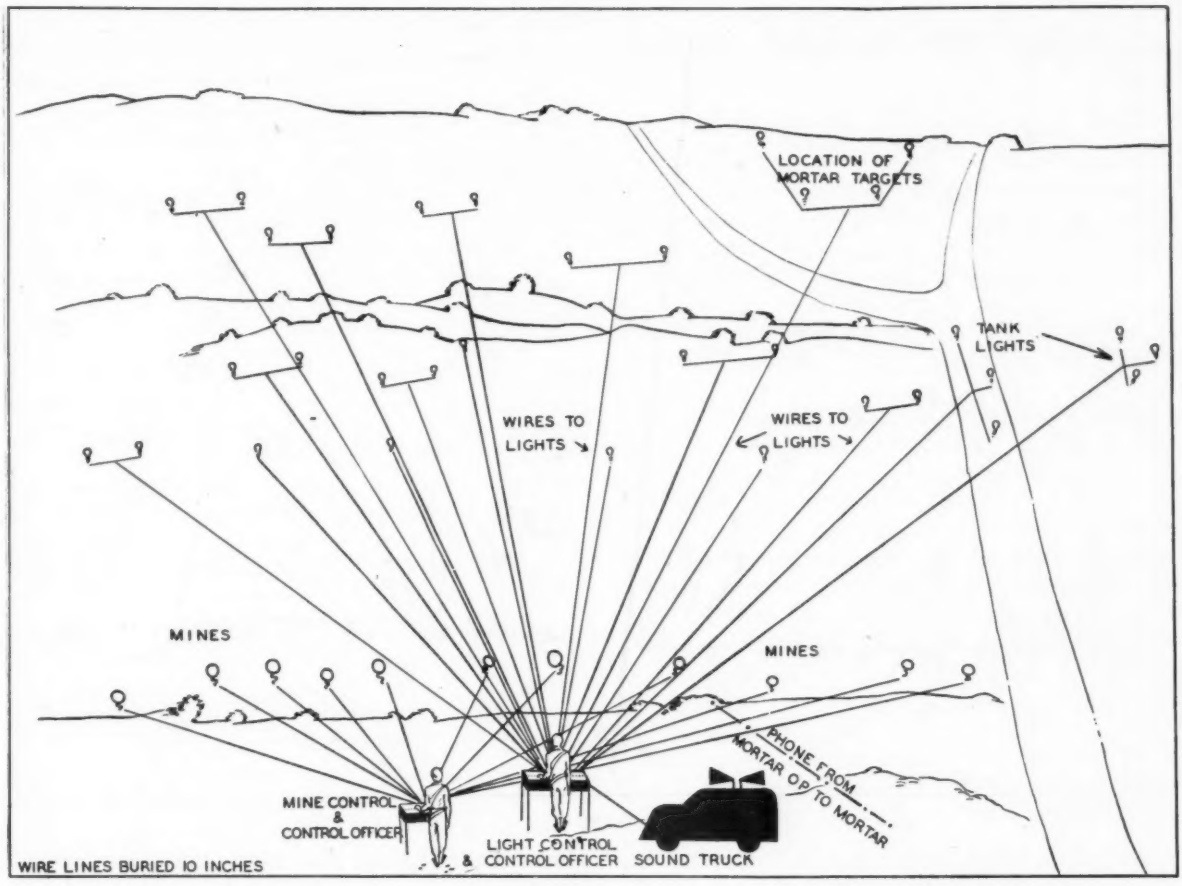


FIGURE 1 A SIMPLE WIRING SYSTEM FOR USE AS A NIGHT FIRING TRAINING AID.

artillery shell in flight.) When one of these whistles is heard, students must insure that they take maximum advantage of the prone shelters which they have started. By means of a switch on the control box, an explosive charge is set off to simulate the impact of the artillery shell. Further battle noises and effects are obtained by a variety of air-bursting fireworks.

Daylight Preparation

The practical exercise and the night firing for the students at the Cavalry School start at 1500. The students first emplace their weapons in a position which they expect to occupy until after dark and which they may be required to defend.

All weapons are registered, range cards prepared, and aiming stakes and lighted aiming boxes located. When this is completed, the students are required to reconnoiter an alternate position located approximately 400 yards to the flank. They are told that it may be necessary to occupy and defend that position during darkness. They are directed to select positions for their particular weapons and mark those positions in an unobtrusive manner so that enemy ground reconnaissance would not observe the markings.

At the time of this instruction, the students have not received instruction in defensive tactics other than the type of fires used. The period is intended to cover only the technique of night firing and hasty cover. For these reasons and for safety precautions, all weapons except the 37mm guns and the mortar are on a general line.

Most of the precautions are dictated by range limitations at the Cavalry School. As far as possible, however, these regulations have been subordinated to tactical dispositions. Covered routes of approach to the position are also reconnoitered and thoroughly understood. During this reconnaissance, possible target areas or routes of enemy approach to the position are discussed by the instructor.

This operation is concluded approximately one hour before darkness. The students are then assembled in an area defiladed from the alternate position, where supper is fed and additional instruction given. During this time, targets are set up in front of the alternate position and the lighting system installed and connected.

Night Practice Firing

At dark the students occupy the previously prepared position and fire a series of problems requiring approximately two hours. They are then given an order to move to the alternate position and prepare to repel an

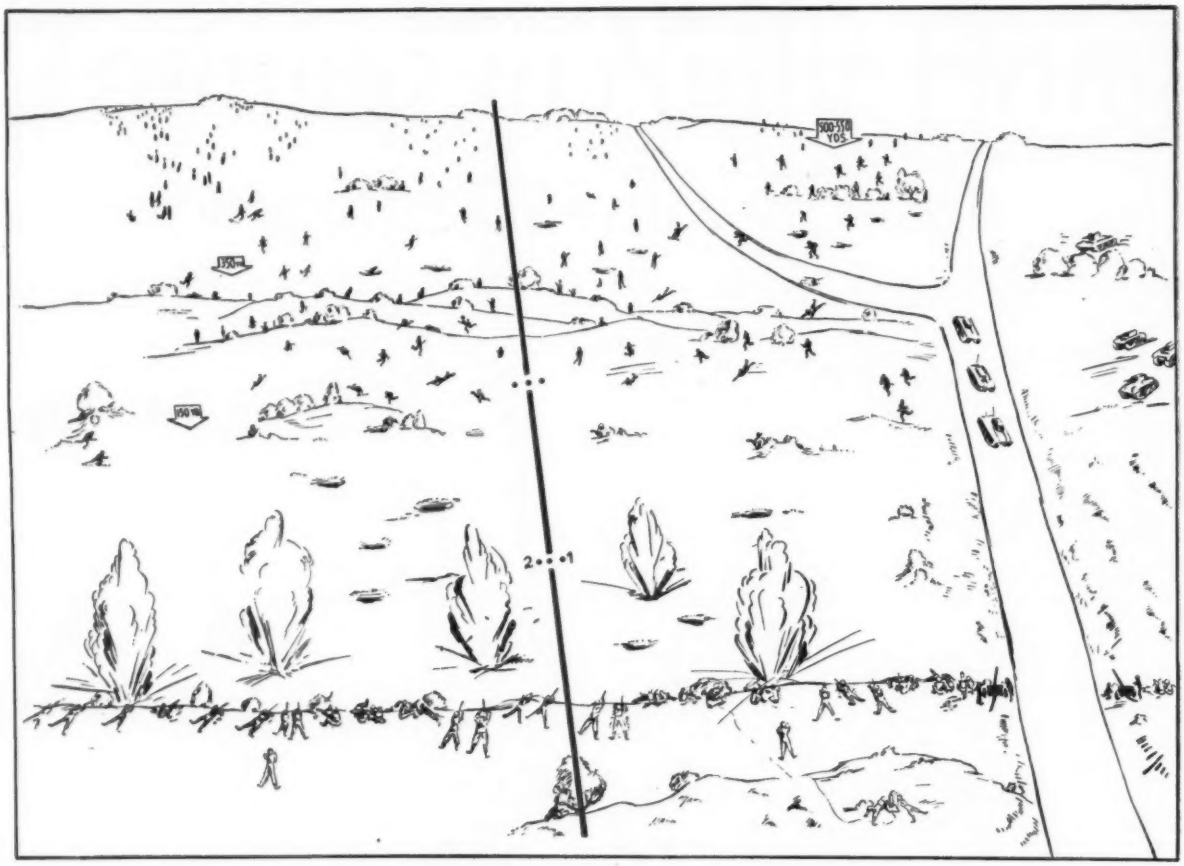


FIGURE 2

enemy attack which information indicates is being organized. The class moves, under blackout conditions, into the alternate position. Noise is to be kept to the minimum. Exposure on skylines is avoided. The position is occupied and prone shelters are started.

Students act as commanders under the guidance of instructors. All are made familiar with the tactical situation. Student unit commanders are required to report when their units are properly disposed. Instructors then check all weapons and all personnel to insure adequate safety precautions. Platoon sectors are prescribed by direction with respect to the firing line, with sufficient overlap between platoons to insure no uncovered areas to the front.

Since the safety precautions already mentioned permit fire in only one general direction, all-around organization of the position is impracticable with the Cavalry School facilities. Except for the width of the sectors assigned to each platoon, however, the conduct of the problem in complete darkness obtains the same effect as though all-around defense were organized.

The targets and the lights are placed in the best avenues of approach for the particular enemy force represented. They are dispersed over the entire front so that the fire of each platoon must extend into the sector of the adjacent platoon in order to insure complete coverage of all targets. The students are required to orient themselves on the general direction of their platoon line. They are then told to fire only at targets appearing to their front or slightly to their flanks in order to insure overlapping fire. Again, range limits prohibit enfilade fire on targets in adjoining sectors.

Some artificiality must be introduced into the targets upon which the mortars can fire in order to avoid destruction of the lighting installation. Obviously, the advancing enemy personnel should be their primary target. Instead, the fire of the mortars is restricted to areas which the enemy might use as assembly positions. The observers for the mortars are located on the front line and preferably on the flank, since axial observation during darkness is not efficient for range determination.

The first loading of all weapons is accomplished as quietly as possible. Machine gun and rifle bolts are eased forward by hand and are not permitted to be actuated freely by the spring. At this time instructors caution the students upon the following points: Since they are confronted with an attack from a direction which was not clearly foreseen, the enemy situation is certain to be obscure. Therefore, thought must be given to the conservation of ammunition. Indiscriminate firing must be avoided.

Adjustment must be made by observation of their tracers. Since a tracer shot which is over the target gives no accurate indication of its point of strike with relation to the target, it is better to shoot low and work up to the target initially. It must be assumed that all enemy

personnel is not concentrated in the lights representing firing weapons. Therefore the area in the vicinity of each light should be searched. Students should not fire except when the lights are actually flashing or when a flare illuminates the target.

Only a limited number of flares of short range are used. It is pointed out to the students that, except in open terrain where flares can be fired well to the front, their use may also disclose some of the defensive dispositions. Students are also told that the supply of flares is limited. Therefore, they must depend upon other means of adjusting their fire.

Adaptability of This Training Aid

Remarkably efficient results have been obtained from the use of this training aid and the methods of fire adjustment herein described. As high as 70 per cent of the total number of ground targets have been struck. The lowest percentage of targets hit to date has been 45 per cent, and a steady improvement has been noted since this low mark was made on the first use of the aid. The number of vehicular targets hit by the 37mm guns has ranged from a minimum of 30 per cent to a maximum of 80 per cent.

This training aid can easily be modified to meet the training needs of tactical platoons and squads. For example, the system of flasher lights can be scaled down to include only one target or an appropriate combination of rifle, machine gun, mortar, or antitank gun targets. They may be supplemented by trip wires on which tin cans are hung. These should be installed by the unit personnel prior to darkness and their general direction from the position marked unobtrusively by small stakes or large nails.

Before the unit moves into the position in darkness, prone silhouettes may be set up generally along the trip wire. A cord is attached to the wire and led to a point on the flank or rear of the position. The cans can then be made to rattle as desired. Machine guns then open at assured short ranges which are increased gradually until low grazing fire is being delivered in the direction of the sound.

More realism can be added by close-in trip wires with similar targets and by requiring the use of hand grenades against them. This restrains the "trigger-happy" soldier and emphasizes the fact that the enemy may be trying merely to locate automatic weapons.

The effectiveness of the method of adjustment, as indicated by the percentage of hits obtained, would appear to make this type of training extremely valuable. It should be followed, however, by a critique to stress the importance of observing the strike of *each* tracer, and the fact that it must be determined before fire is opened whether or not the enemy attack is merely an effort to locate our automatic weapons, in order that they may be neutralized prior to an attack on a larger scale. It should also be pointed out that the use of tracer ammunition will make it easier for enemy observers to locate such weapons.

More About the Kitchen Truck

Like Topsy, kitchen trucks are too often "just growed." The article on this subject in the September-October issue of The Cavalry Journal offers an efficient solution to this important problem and should do much to alleviate haphazard arrangements by directing thought along these lines in the proper direction.

As in most military situations, *a* solution is not necessarily *the* solution. In this connection, two supplementary suggestions are offered.

If any cooking is to be done on the march—which is perfectly feasible, and practical, in that it is a great time saver—certain precautions in the interest of safety of the mess detail are important.

1. Some means of communication between the cooks and the driver should be provided so that in the event of fire, the truck may be brought to a halt immediately. One such device that has proven satisfactory is a 6-volt buzzer or door bell in the cab. This is connected to the truck battery and controlled by a stop light switch actuated by either one of two wires strung through eyes screwed into the top of the bows on either side of the truck. The wires should extend down the rear bow to the tail gate so that wherever in the truck a man is—even if he is driven to hanging over the tail gate—he can pull a wire to signal the driver.

2. With the stoves arranged across the front of the truck, a sudden emergency stop may cause the cooks to be precipitated into the hot stoves with painful results. This dire possibility has been prevented by rearranging the stoves along one side of the body and placing the ice box across the front. This further permits a larger ice box and a longer work bench locker opposite the stoves.

John T. Snodgrass,
Lt. Col., C.A.C.

In the article, "How to Prepare the 2½ Ton Cargo Truck as a Kitchen Vehicle," in the September-October issue of The Cavalry Journal, it seems that one small but important safety precaution has been overlooked. If the unit is to be used on the move, some means should be provided to anchor the leg of the "knock-down" table to the floor. Unless there is such an anchor to prevent up-and-down as well as side-to-side movement, the jostling of the truck is likely to cause shift of the leg to such an extent that the table will lose its support and fall to the floor.

Any number of obvious methods could be used to lock the leg in position.

Howard M. Collins,
M/Sgt., DEML.

Dismounted Reconnaissance

A Training Problem from the 2d Cavalry

by Major Thomas B. Hargis, Jr.

"YOU can't see anything sitting in a vehicle." The truth of that statement is self-evident, but to get the present day soldier to believe it is another story.

Mechanized reconnaissance units have been often and bitterly criticized for their failure to obtain vital information. The criticism was justified without question, but very few units ever did anything to avoid it except to ride their vehicles harder and faster than before.

The 2d Cavalry Learns to March

When the 2d Cavalry was reactivated in January of this year, the commanding officer was determined that the regiment know how to walk as well as ride. During the early phases of our training we out-marched many infantry units—a practice not common to mechanized units. Our marching culminated in a dismounted march from Columbia, S. C. to Charleston, S. C., a distance of roughly 150 miles. This included one march of 25 miles in 8 hours with full pack.

After the troops had learned to march and had become well hardened, the training progressed to dismounted scouting and patrolling in large doses. All men in the regiment received this training. Later, in August, as a final test of their proficiency, all troops participated in a dismounted patrol problem that lasted for two days.

This problem took place in the area bounded on the south by U. S. Highway 1, on the north by Wateree Pond, on the west by Highway 21, and on the east by a N-S line through Lugoff. An area roughly 25 miles square. (See sketch.)

The patrols were composed of not more than seven men, led by an officer or N.C.O. The men carried full field equipment, including "C" rations for one day.

The following situation was given to all patrol leaders just prior to the beginning of the problem. (A thorough check was made before starting patrols to see that they thoroughly understood the situation as given.)

Situation

General Situation: Red forces advancing between Wateree and Congaree Rivers have reached the line of Highway 1 and have established a strong counterreconnaissance screen. They are believed to be concentrating armored and infantry units on their left flank.

Blue forces are retiring slowly to the southeast but still hold the east bank of Wateree Pond.

Special Situation: The 2d Cavalry has been ordered to discover strength and composition of enemy forces in Longtown, Bloomingdale Church, Blaney, Highway 1, Highway 34.

Information: The following essential information was required:

1. Strength and identification of units, particularly armored units.
2. Ammunition dumps.
3. Highways. Are the following roads being used by armored units:
   a. Highway 34 Ridgeway to Junction Highway 1.
   b. Highway 213 to Junction Highway 270. Highway 270 to Blaney.
   c. Road from Oak Grove School to White Oak Church to Highway 213. Highway 213 to St. Johns Church.
4. Creeks and Bridges.
   a. Are bridges over Sawney's Creek between Ridgeway and St. Johns Church intact?
   b. Is Sawney's Creek fordable for foot troops between bridges?

Instructions: Patrols were ordered to reach observation points by daylight of the next day and to remain in observation all day. At 2300 that night they were to move north to Wateree Pond where boats were to be available. Identification was to be established by giving "whip-poor-will" call 3 times answered by boat commander with "hoot owl" twice.

All information was to be turned in upon reaching the other side of Wateree Pond.

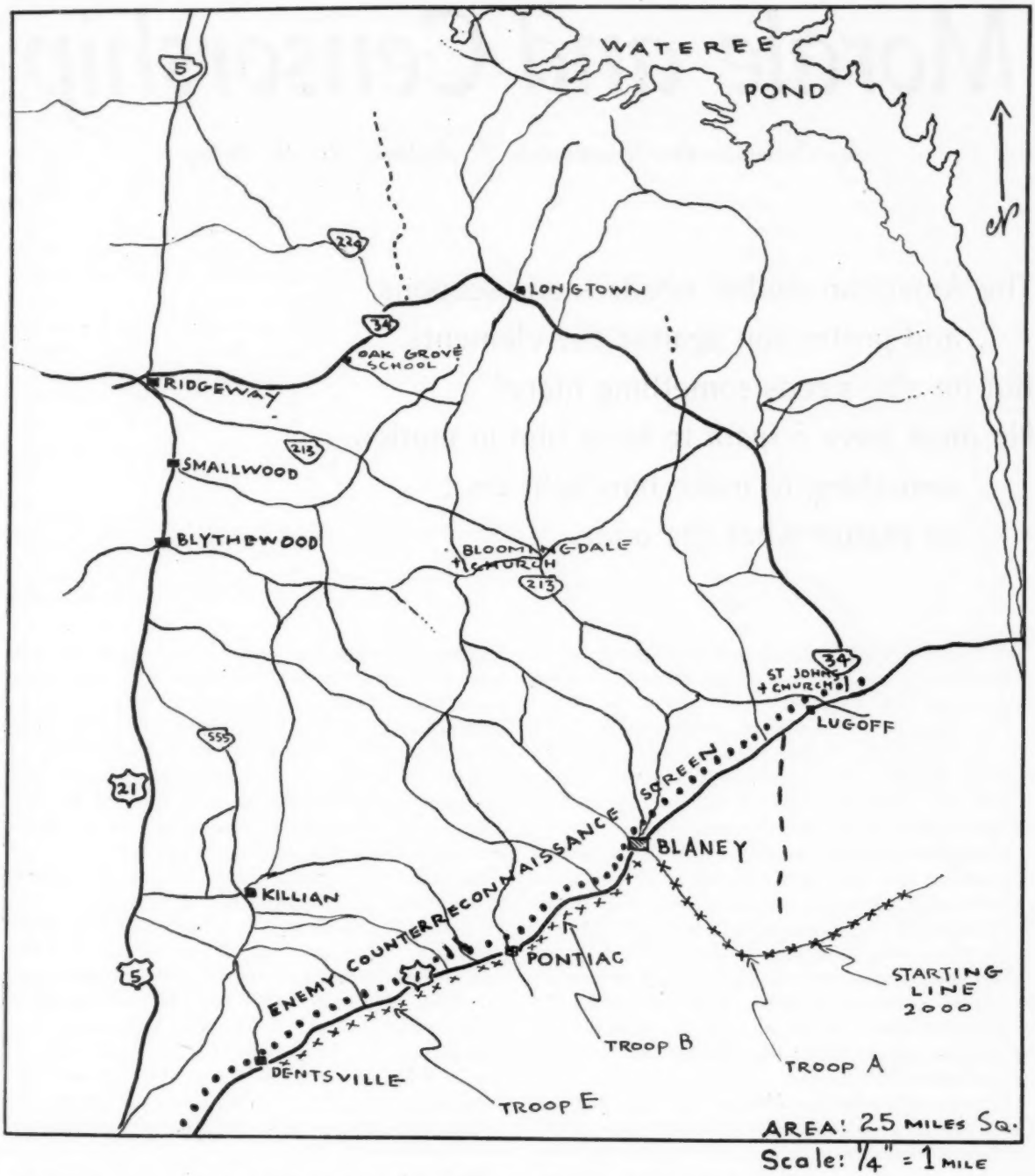
Controls: The enemy was represented by large signs placed in the area indicating location of various sizes and types of units. In addition, vehicles with similar signs were dispatched along roads to simulate movement of armored and motorized elements.

Aid stations were established throughout the area to care for any men who were hurt or became ill during the course of the problem.

The area was patrolled throughout the problem by staff officers and squadron commanders to insure proper movement and concealment of patrols.

Operation: The line of Highway 1 was divided as shown on sketch, and zones were assigned to each troop. To avoid bunching, patrols were placed on a starting line at intervals of ¼ mile. All patrols started at approximately 2000.

The patrols moved on roads during darkness, and numerous checks by staff officers revealed that only a few were careless. By daylight the next day, most of the patrols were in position to observe the roads in their area and to continue their attempt to secure information. At about 0100 the next morning patrols began arriving at Wateree Pond, and the call of the "whip-poor-will" and "hoot owl" could be heard. By daylight



all but a few patrols had been ferried across and information was beginning to reach Regimental Headquarters.

Results: The information obtained by the patrols in most cases was excellent. All installations or enemy columns represented were found and reported, and a very complete picture of the represented enemy was obtained. The results were in general excellent and the problem was considered a very successful one.

Conclusions: From this problem the 2d Cavalry has become thoroughly convinced, not only of the practicability, but the absolute *necessity* for dismounted patrols by mechanized units. In no other way can a complete picture of the enemy be obtained. When counterreconnaissance screens cannot be penetrated, patrols on foot must go forward to get the information required by Regimental Headquarters.

Communication for these dismounted patrols will be difficult. One solution may be carrier pigeons. The 2d Cavalry is now on maneuvers in Tennessee, and our dismounted patrols are to carry pigeons. If they are successful, then we shall have mastered one drawback to dismounted patrolling.

You cannot get information sitting in a jeep.

Morale and Censorship*

by Commander Frederick J. Nelson, U. S. Navy

The American soldier needs food, weapons, and protection against the elements. But he also needs something more! He must have a *spark* to keep him in motion—something to make him fight on, no matter what the odds.

AS INDIVIDUALS, members of our fighting forces require certain well established elements to keep their morale at a high pitch.

The first is food. Man is an engine, and he must have fuel to operate. Reduce the ration and you reduce fighting efficiency. Cut it drastically for a considerable period, and a man loses the will to fight. Starve him, and he weakens to the point of submission.

The fighter requires weapons. For years the officers of our Army and Navy have said that if the lawmakers gave them as good weapons as their enemies, they would do a creditable job, and recently, where this situation has been true, they have made good their boast.

Food and weapons are not all. The fighter requires protection against the elements, warm clothing for the winter campaigns, suitable garments for tropical service, and no matter where the fighting may be, comfortable shoes.

But even if you feed a soldier or sailor well and provide him with good weapons and clothing, you still do not have an outstanding fighter. He needs a spark to keep him in motion—something to make him fight on, no matter what the odds.

The American fighting man is not a mercenary. Of itself, the recent pay increase did not do much to raise the morale of the fighting forces. What it did was to enable our men to supply their own personal needs, to pay for insurance, canteen purchases, movies, etc., and still have enough left to send some money home to mother or father or to other dependents.

It is always advisable to explain what men are fighting for in terms of the things that they hold most dear. Freedom is an abstract sort of something to the man behind the gun, but he will understand if you reduce it to terms of his right to sell the farm, to vote without coercion, or to take the job he wants. And if you put the reason for requiring his services in words relating to his family life, his mother, younger sisters and brothers, his wife and children or his girl, you are then talking about the things he cares about and for which he is always willing to fight.

Leave is a big morale factor because it performs beneficial mental readjustments. It is necessary that the fighter be able to see for himself what his efforts will attain. We hear it said, "If I could only be home with my folks for a week end—if I could just talk to my girl again." He wants to see how things are going at home with his parents, what his girl thinks about him. And if everything is all right, if his girl still waits for him, or if his wife and children are still safe and comfortable, he will return from leave a better fighter, and nothing can stop him in his enthusiasm to get the war victoriously over.

With our forces on many fronts, leave for the majority of the soldiers and sailors is now out of the question. Most of our men realize this, and they will not grumble too much, if only they can hear regularly from their kin. Even though letters are a poor substitute for leave, it cannot be denied that mail is their biggest single morale booster. The proverbial wine, women, and song are secondary, and *often a substitute for what the mail failed to do.*

Not only does the fighting man want mail, but he wants it regularly. In addition, he likes to get it as soon after it is written as circumstances permit. Some months ago, the Congress passed the free mail privilege

*U. S. Naval Institute Proceedings, April, 1943.

for the personal correspondence of soldiers and sailors, but a letter is seldom sent "free" for any distance if an air-mail stamp will get it there sooner.

Unfortunately, the morale value of regular fast letter correspondence has not been fully impressed upon certain groups who exercise control over the delivery of mail to men in the service. I refer to our censors.

Fighting men all agree that censorship is a necessity in time of war. All that they ask is that it interfere as little as possible with the free flow of their correspondence—not an unreasonable request. And they think that once a letter has been censored, it should be sent promptly to the addressee.

There are three groups of censors who pass on soldiers' and sailors' mail. They are Army censors, Navy censors, and national censors.

Service censorship is carried out by the Army and the Navy within their own organizations, but the systems used in these two branches of the services are not alike. Soldiers' mail is censored by their company officers, who rotate this unpopular duty. Army officers censor their own personal mail, but it is subjected to spot censorship by U. S. Army censors. Mail of enlisted men in the Army, once passed by an officer, is not censored again. To facilitate prompt receipt of mail from the States, the Army has established a system of "A.P.O.'s" (Army Post Offices). Thus, a soldier stationed abroad has his mail addressed to A.P.O. 694, c/o Postmaster (of some Eastern, Western, or Gulf port). In that way no information is given about his location, and his mail is not censored before leaving the country because it has a United States address.

In the naval service, all the personal mail of both officers and enlisted men is censored by a designated censor, invariably an officer. Only a few senior naval officers are permitted to censor their own mail—captains, executive officers, flag officers, and members of their staff—but all may be spot censored at any time. These differences in the censorship regulations between the Army and Navy for officer's mail must not be construed as being indicative that our army officers exercise superior discretionary powers in their correspondence. It is just another difference between these two services.

National censorship is a factor in the life of the armed forces because it is this organization that censors the mail going to the soldiers and sailors. Here we find a group of individuals—mostly women, with but a smattering of training, and with no military background—dictating, in a blundering way, what members of the armed forces may read in their letters about the thoughts of their family, the sentiments of their kin or the conditions of their country.

If a strike is called in the home town, some censors will snip any mention of it from letters to the armed forces, although clippings from the local paper enclosed in the same envelope, and carrying the news in greater detail, will be passed. Some censors object to criticism of national policies, others to mention of restrictions or inconveniences on the home front. If rising prices or scarcities are commented upon, it is a safe bet that they too will be deleted.

Not so long ago, an officer received from his wife, a letter that had been unusually slow in reaching him. Noting that there was about two weeks' difference between the date on the letterhead and the cancellation on the envelope, the officer made a few inquiries. In the course of the investigation, he learned that this letter, which contained a general discussion of conditions in his home town, was returned intact to his wife by one censor with the statement that it would be bad for the morale of the recipient. The writer, upon receiving the returned letter and mindful of the inconsistencies among national censors, did not alter one word but simply addressed the letter to her husband in a new envelope. The censor who received it on the second trip, presumably having different ideas about what was good for a fighter's morale, passed the letter in toto.

In the great citizens' Army and Navy that we are building today, there is an alertness and consciousness of community and national problems that differs greatly from the German or Jap fighters, who are unconcerned with national issues in their blind obedience to a dictator. For this reason, censorship of things that the man in the service is thinking about anyway, and upon which he dearly desires home comment, is apt to enrage him. He feels that he is being treated as a schoolboy, not as a voting citizen of the country. After all, it is his own country—in a peculiar democratic sense, the one for which he is fighting, possibly dying. His morale is strong enough to take the plain unadulterated truth. A badly "snipped" letter or newspaper may lead the recipient to imagine that matters are far worse or more serious than they are, and this will have a distinctly unfavorable reaction on his morale.

Possibly much censoring and snipping could be avoided if the general and specific directives to censors were published for the country at large to understand. If the rules are clear and reasonable, they can stand the light of public scrutiny and will aid the home front in excluding questionable matters from their letters. Voluntary coöperation in this distasteful matter would doubtless lighten the censor's burden and speed up the mail deliveries.

It is in the censorship of weather that censors make themselves ridiculous. Every schoolboy knows that in certain parts of the world weather migrates. A comment by a sports announcer that it is a beautiful clear autumn day at Chapel Hill is priceless information to the submarine command off the Virginia Capes. Similar information that a hurricane has swept over Martinique tells a "wolf pack" in the Caribbean that visibilities will be low until the storm blows itself out.

But weather does not migrate in all latitudes; in some, not at all; and in others, only during certain seasons. For a sailor stationed in the Canal Zone to remark

in a letter that it was raining there in August, is to reiterate common knowledge. To say that it was raining hard, is also common knowledge. In fact there is nothing anyone could write about the weather in Panama that isn't in every textbook on climatology. The same thing holds true for most tropical latitudes, but the national censors will slit a letter to ribbons that makes any reference to weather anywhere. And should you begin a paragraph by saying that you are low and dreary, and feel as dull as the day, you may be assured that the addressee will never read that. Believing that you are transmitting secret weather information, the national censors will pounce on your sentence with a poised indelible brush or open scissors. More common sense directives could eliminate such inconsistencies.

The question logically arises then, why should incoming mail to our soldiers and sailors be subjected to national censorship? Are there any people anywhere more anxious than our soldiers and sailors to bring the war to successful conclusion as soon as possible? Is there any group more anxious than our officers to deny information to the enemy and in a better position, by virtue of their training, to pass on what may be said in personal correspondence? It is they or some part of the military organization itself, rather than clerk censors, who should be given the responsibility of deletion. It must be borne in mind that it is not the censorship of incoming mail that members of the services dislike, but only the inconsistencies and the delay incident thereto, a delay that often neutralizes any advantages in time gained through the use of air mail.

"V" Mail has done much to improve the regularity of correspondence to the armed forces. But, while it gets the word back and forth, it lacks the personal element. In short, it is coldly mechanical. Men would like to receive their letters intact, to read from the stationery on which the letter was written. And of course, they all would like to feel that what was sealed in that envelope was for their eyes and for no one else. It has long been recognized that people bare their souls in their letters, and private correspondence to members of the fighting forces should be kept as private as consistent with the interests of security.

Complete Addresses are Necessary to Get Mail to Soldiers Overseas

In addressing mail to a soldier it is necessary to give his rank, name, Army serial number, organization and Army Post Office number. By organization, the War Department does not mean the Army or division to which the soldier belongs, but rather the unit. Following is a model address:

Pvt. John Doe, ASN 1234567890,
Troop E, 112th Cav.
APO 502 c/o PM,
San Francisco, Calif.

Censoring mail is an irksome task. To make the job as light as possible some officers discourage their men about writing too often or putting their thoughts into too many pages. The post-card check-off list, as a substitute for letter correspondence, must be an answer to the indolent censor's dream, for to discourage letter writing by insisting that such brief post-card forms be used or to encourage brevity in personal correspondence is to shake the keystone of morale.

A fighter must have an outlet for his sentiments. He needs some vehicle to get his thoughts to those he knows will value his opinions and who have a sympathetic understanding of his type of human nature.

Sometimes, of course, a man just likes to blow off a little steam. Letter writing is the least harmful way to reduce high internal pressure, for mental complications arise only when men are unable to get the load off their minds. Besides, when a man is writing letters, he is using his powers of concentration and expression—a development most useful in his daily work. Writing helps to crystallize thinking, and when men are writing letters, their conduct is always exemplary.

Censors have two important missions. One is *to preserve the security of information,* and the other is *to promote rapid delivery of correspondence.* It is in this second category that many censors are deficient.

When a soldier or sailor deposits his mail for censorship on his post or ship, he knows that his officer-censors will make an effort to get it out in the next mail. He knows that the officers realize the morale value of regularity in personal correspondence. He knows, too, that his officers have a full understanding of what should be deleted. And if inadvertently some information indiscreetly slips from the point of his pen, he will be cautioned personally about his carelessness. Furthermore, his letter would not be delayed to insure that time would render the suspected information valueless. The officers and men of the Army and Navy know that the primary mission of service censors is to get "the mostest mail through fastest." The national censors must learn that too.

Censorship is an indispensable, unpleasant feature of modern warfare, and the necessity for censoring the outgoing mail of the armed forces cannot be denied, but if censors strive to get the mail through as quickly as possible, the men in the field and on the high seas will not complain.

"Morale is a lot of little things," as a popular advertisement quite truthfully states. Without doubt, letters may be the greatest wartime morale builder in both service and civilian life. A service community is stimulated into renewed activity after a big overseas mail comes in.

A commander in the Solomons writes that he wishes all battles could be fought after "mail day." Letters supply the spark that we all need to win this war. Encourage them, clarify the rules of censorship, and speed them to their destinations!

Mountain Cavalry*

by

Captain D. Ernesto Castaneda Araoz

CHARACTERISTICS of mountain terrain entail a special form of operations so diametrically distinct from preconceptions of warfare in flat country that precepts established by ordinary regulations are often broken in order that other rules may be applied especially for mountain action.

The great distances to travel, plus the enormous differences of elevation, demand an excessive endurance of mountain troops. This must be augmented by efficient and adequate means of transportation.

If certain characteristics of mountain warfare are taken into account, it is easy to arrive at the conclusion that in order to conserve energy, speed up the operation, and exploit surprise, an element more mobile than infantry, mounted on mules or mountain horses, is necessary.

"Rough and broken fronts, dispersion of action and *maximum value of time* are the characteristics of this type of warfare."

"Movement more than concentration of fire, is the essence of mountain combat; silence of operation, therefore, is necessary."

"This maneuvering type of warfare, inspired by the economy of means and of energy, profits to the utmost by surprise. It is particularly fruitful in results, because the mountains lend themselves to it in its widest application."[1]

Reconnaissance

The lack of roads and communication facilities in this type of terrain make it imperative that the command be supplied with accurate data. For this, the commander must rely on mobile units that can supply opportune information from ground reconnaissance—the mountain cavalry.

"Good and timely reconnaissance supplies sure and practical data."

"Careful reconnoitering expedites sure and positive data about the terrain."

"In the high mountains, more than anywhere else, the service of reconnaissance constitutes an important task. It is difficult and often decisive. It has intimate contact with the commander's plan of operation, and when brought forward to the adversary's position is of such importance that it has a direct bearing on the future development of the action."

"An efficient reconnaissance performance should be a great distance forward, with the object of supplying the necessary information to complete and perfect the operation."

The above paragraphs, transcribed from one of our training manuals, lead to the conclusion that as far as speed is concerned, reconnaissance can best be executed by mountain cavalry. In this way, the mass of the infantry can be held until the last moment in order to arrive at the scene of combat with all of their shock force, to seek the decision. This reconnaissance mission, given to the mountain cavalry, must be complemented whenever possible by aerial reconnaissance.

Combat Missions

In mountain terrain, it is advantageous to gain as much ground as possible before reaching the defiles in order to effect an uninterrupted advance and thus prevent the enemy from getting the advantage of that terrain. Because of its mobility the mountain cavalry has a decided advantage on this type of mission.

Frontal attack in the mountains offers very little

Three Lions

In the lake district of southern Argentina at Bariloche, the glacier of Tronador adds to the difficulties of the mountain terrain.

[1] *Information Bulletin of the Military Forces*, No. 14, 1941.

*Courtesy *Revista Militar* (Argentina).

probability of success. Consequently, the decision will usually be sought by means of action against the flanks and rear of the enemy, in which case, cavalry can be put to good use executing a full and rapid action against the least expected point.

Once the mountain infantry has broken the hostile resistance and commenced its pursuit, it becomes necessary to attempt the annihilation of the enemy. Mountain cavalry, because of its greater mobility, can flank the retreating enemy and hold him until the annihilating force of the infantry arrives.

A more frequent mission for which the mountain cavalry possesses a special aptitude, will be that of delaying action. The terrain almost always offers cover for the mounts immediately behind the delaying positions. Thus, a position can be occupied until the last moment; then, by moving rapidly to occupy the subsequent delaying position, cavalry can again use its mobility to make its action felt in the intermediate territory.

By its characteristics, mountain cavalry can successfully carry out guerilla warfare, and enter deep into the enemy lines in order to operate against enemy supply lines or hostile reserves. For this, the terrain is well adapted, particularly if sufficient capacity of movement is maintained.

Mountain Mobility

What is the rate of march of mountain cavalry on mule- or horseback? During recent trials in the big mountains, mounted troops have been able to march an average of 6 to 7 kilometers per hour—an impossible speed for a foot soldier to obtain. It is clear that this speed could not be sustained for more than five days marching, even if part were at forced march, which means a great wear on the animals. When this effort is necessary, there must be no hesitancy in putting a forced march into effect, if by it a successful action can be realized, a surprise perpetrated, or a retreating enemy flanked.

The normal speed of mountain cavalry in the high mountains is from 4 to 5 kilometers per hour, which provides an advantage over the dismounted men, both for combat and reconnaissance missions.

If the fatigue of mountain infantry, even though better trained, is taken into account, a long march in mountain terrain will necessarily lessen its combative strength at the moment of battle. But if the troops which must carry out this operation are transported on mule- or horseback, they can arrive at the combat with full combative strength, even though the mounts have suffered great fatigue.

Mountain cavalry is not presumed in any way to replace the mountain infantry, as infantry will continue to have the most efficient shock strength and will decide all definite action. Cavalry is intended only to provide the infantry with a valued element of mobility and to coöperate with it in a united effort, without the least idea of self-glory and in the spirit of sacrifice which must animate the soldier, especially when it is necessary not only to defeat the adversary but to surmount the difficulties of the terrain and to endure the severity of nature.

Organization

According to the characteristics of the terrain and the form of mountain warfare, the units of cavalry specializing in this type of operation must have a particular organization. The organization of regiments is plenty large enough. (Brigades or divisions are not considered necessary.)

First, the unit must be extremely mobile, possess heavy fire power, and be divided easily into self sustaining subunits. Consequently, it is necessary that the subunits (squadrons) count on a strength of fire capable of maintaining a combat of prolonged duration in isolated missions.

The regiment could have the following organization:

Staff, with communications section provided with radio-knapsacks, telephones, and blinkers on pack horses.
Three squadrons of riflemen organized as before mentioned.
One squadron of machine guns of 3 sections of 3 pieces.
One section of light mortars of 3 pieces.
One section of sapper-destructors.
Pack animals.

This organization, though it does not appear fast, is necessary for reasons that will be seen.

Only rarely will the regiment act together, but will act most often as subunits over an extensive front. This necessitates subdivision, that naturally decreases the apparent lack of speed of the remaining portion of the regiment.

There will always be squadrons in the different combat missions that must operate on a front where the difficulties imposed by the enemy may be greater. This will make it necessary to give them additional fire power, which the commanding officer of the regiment will be able to do, as he has a squadron of machine guns and a section of light mortars on which to rely.

In the mountains, mortars will prove very valuable, whether used to silence a nest of automatic arms cleverly placed or to scout blind spots, so frequent in this type of terrain.

Lastly, whenever the complete regiment must be used in combat, either in attack or for resistance, its fire power makes it able to operate with success.

Regarding proper cavalry missions, such as offensive and defensive patrols, an organization of this kind affords the fire power necessary to accomplish them. The detached patrols would be relatively strong without weakening the nucleus (reconnaissance detachment) too much. This detachment will always have arms capable of acting as auxiliary of the patrols, which can be put

into action at convenience or held in strength at their post when this is best suited to the situation, or when their mission is considered complete.

The advantages of this arrangement also fit into reconnaissance missions, since, while most reconnaissance patrols have only the mission of *seeing*, they will also have to do battle, either to drive back another patrol in a narrow pass or to try to open a roadway if they have fallen into ambush—which can happen easily in mountain terrain.

Equipment

Personal equipment can be similar to that of the mountain infantry of our army.

As for mounted equipment, the saddles now used by our troops are not the most appropriate for mountainous country.

In San Juan, as well as in Mendoza or Neuquen, the mountaineers, whatever their financial resources, use a saddle which in certain mountainous regions is called a *casco chileno* ("Chilean cask"). This consists of two packsaddles of hardwood, with two saddle-trees of iron, relatively high, attached to the saddles with rivets or screws. From one saddle-tree to the other runs a wide leather strap, attached to these and also to the packsaddles by means of halters. It is much lighter than our "lowland" saddle.

The difference in weight is so appreciable that it is possible to carry an additional blanket, not only useful but at times imperative in the low temperatures of the mountains. Moreover, for the convenience of the rider, a small cushion can be used to make the saddle softer, necessary on long marches that will be frequent and almost normal in the mountains. This cushion can be substituted for the saddle padding with the advantage of furnishing a warm seat that does not have to be filled with straw, so difficult to obtain.

The use of the breast strap and crupper is highly necessary in the mountains where steep slopes must be descended or climbed. With these elements, frequent delays to adjust equipment are avoided. The breast strap is not a capricious innovation with respect to the breast covering, but works in a more balanced way than the latter, for in passing around the breast of the animal it is joined to the two rings of the cinch.

Special Training for the Mountain Cavalryman

In effect, training of the soldier to acquire the lung capacity and adaptation of the circulation to the fatigues of the mountains is of highest importance. Marching exercises and races over varied terrain, combined with respiratory exercises, should be given. Races and marches in ascending ground, obstacle courses, climbing ropes, trees and rocks will prepare the soldier to run and march in the mountains. Relay races while carrying certain weights will train soldiers for handling ammunition supply in combat. Weight lifting also will prepare the soldier's muscles to carry and lift loads on the horses.

Instruction in skiing and marches in snowshoes are indispensable, as on many occasions the mountain cavalry will have to leave their mounts and make prolonged runs across snowy fields to places where the situation requires them.

Conclusion

Mountain cavalry is not a new theme for us, and it is not believed that anyone will be surprised by this article. But if the idea is not new, it is still an obligation to us who have had the fortune of knowing the mountains to offer suggestions, not for adaptation in totality or even in part, but to awaken a professional anxiety in our comrades, especially those younger.

Mountain Fighting in the Caucasus

DURING fighting for mountain roads and passes in the foothills of the Caucasus, entirely new and successful methods of coördination evolved between cavalry and artillery.

When the Germans attempted to advance against a populated place, they were suddenly counterattacked by Red cavalry. Recovering from their surprise, they opened artillery fire first on the horsemen, then on the Soviet artillery battalion. The Red Army men kept maneuvering their guns, installed on a narrow mountain plateau, from one point to another and got the upper hand in the artillery duel.

Meanwhile, the cavalrymen dismounted and made their way to the German position. They were accompanied by mobile artillery which tackled the enemy gun positions and took them by surprise from the flank. The Germans hurled into action a company of automatic riflemen who were soon completely wiped out.

The Nazis had to divide their forces to combat the artillery and the dismounted cavalrymen, and this gave the Red Army men a chance to make a devastatingly successful cavalry charge.

The Red Army men in the Caucasus were supported strongly by the mountaineers themselves, who detailed their best guides to lead the Red Army to the enemy's rear and show them advantageous positions for ambushes and traps.

The forest-covered slopes were very favorable ground for Red snipers. Dozens of them hid among the rocks and bushes. In one sector where the Germans launched an attack, a Soviet sniper, taking up a position on an overhanging cliff, picked off eight Nazis with eight shots.

The Germans detailed a special detachment of 50 automatic riflemen to hunt for him. In a few hours 17 more soldiers had dropped to the sniper's bullets, and the Nazis were forced to give up their efforts. The Soviet unit holding the height threw the enemy back to his initial positions.

—*Soviet Information Bulletin.*

British Remount Depot Trs

In the mountainous parts of Abyssinia and Eritrea, particularly in the campaign leading to the capture of Keren, the Royal Army Service Corps Pack Trains carried ammunition and food where no other means of transport, apart from men on foot, could possibly have gone. Likewise in Tunisia—it has been said that the only fault of the pack transport there was that there was not enough of it. The same tale is being told also of Sicily.

NEAR Melton Mowbray, down in "the Shires," the heart of the English fox-hunting country, there can be found the sole remaining remount depot of the British Army.

Until about six years ago Melton was only one, and not the largest, of a number of remount establishments whose primary function was to furnish troop horses for the cavalry, and chargers for the mounted officers of all arms. Now, of the "old" depots, only Melton is left. Its business today is the provision and training of horses and cobs for pack-carrying in mountainous or trackless countries, and for draught work at stations at home, with a few mounts for officers in mountain artillery and pack units on special field duties.

In the old days, Melton and the other remount centers supplying the British Army were run as semi-civilian concerns, under the general supervision of a Director of Remount Services at the War Office. Now the whole matter is under the control of the Director of Veterinary and Remount Services, at the War Office, and the white metal badge of the Royal Army Veterinary Corps, with the figure of Chiron at its center, is the military emblem most in evidence at Melton.

Out of the town the depot lies at the top of a gentle rise, surrounded by what in England is regarded as an extensive grass farm—though miniature by American standards of space—in pleasant undulating country. The central brick buildings were, long ago, a stud farm in the midst of the Quorn, the Belvoir and the Cottesmore Hunts countries. There are also rows of hutment stables of later construction. Altogether a few hundred horses can be accommodated, in boxes, and there are always many others out on the grass farm.

The Commanding Officer, Lt. Colonel J. J. Plunkett, O.B.E., of the R.A.V.C., travelling over the length and breadth of the British Isles, buys horses at a fixed maximum price, for the War Department. He knows every dealer and every farmer who has horses to sell in England, Wales, Scotland and Northern Ireland. He buys cobs mostly, from Yorkshire and East Anglia and, still, from that most fruitful horse-recruiting ground for the old cavalry, Ireland—but also many cobs from Wales, a few from Scotland, and just a sprinkling of ex-hunters from various parts of the Kingdom.

The horses are bought strictly with an eye to the particular work that they will be required to do, and on purchase must be known to be reasonably quiet to ride or drive. No initial breaking-in of horses is done at Melton in wartime. In these days they are usually wanted for pack work (the right size is between 14 and 15 hands) but because of the vital interests of economy of rubber, motor fuel and oil, and the release of motor drivers for service abroad, there is also an increasing demand for draught animals for short-distance cartage around static Army establishments up and down the country.

★P. R. Service, Northern Command, British Home Forces.

rs Pack Horses

*by Captain E. E. Phillips**

Commanding Officer, Lt. Colonel J. J. Plunkett, O.B.E. *(left)* and his Adjutant, Captain Hart, make their morning round.

At Melton the newly-bought remounts arrive in batches of perhaps twelve to twenty at a time, many of them very "green," poor and nervous, like new boys at a school. They need time to be conditioned, and for the best results should spend several months at the depot before going to their units to begin their real work. This conditioning consists almost exclusively in giving the horses light daily exercise and practice at the work for which they are intended. They are walked and trotted around for so long each day and kept on a good regular routine of feeding and grooming.

Cobs and ponies, already quiet under a rider, are usually quickly trained to carry packs. Near the depot is a little area of grassy mounds and gullies which represents hilly country for this sort of practice. Now and then a beginner, especially if his pack slips and drags a bit, will kick up his heels trying to buck it off, and there is some fun for a few minutes; but normally this training goes on uneventfully enough.

Horses destined for draught work are started with a heavyish log to pull, and a walking driver with a long rein. Then they learn to go in pairs—an experienced horse paired with the learner. They learn to draw one of the old Army general service wagons, on long reins, or an old limbered wagon with a rider riding-and-driving, postillion fashion. They all take their turns in carting around the district loads of forage and other stores connected with the depot.

Finding and keeping a staff, sufficient in number and of the right sort, in the face of the all-round demand for man-power and woman-power, is a major problem at Melton. The subordinate staff are all civilians, though many of the men have had their share of horse soldiering—some in India or Egypt or South Africa as long as 40 years ago. Most of the men are in fact elderly, or downright old, with the long-lined and leathery faces that seem to belong to old horsemen everywhere, for the younger ones have gone into other forms of war service.

About half of the staff now are women and girls, who, as the colonel warmly acknowledges, have produced a very fine war effort. "Believe me," he says, "the winter here is hard for them." Each one does the same sort of work as a man in the depot. The girls, like the men, are taken on as either riders or stable hands, and usually they stick to the side of the work in which they start. Most of the riders now are girls, some of them quite young. They wear workmanlike, well-used riding kit, including either jodphur trousers or breeches and puttees, and velvet hunting caps. Those about the stables favor gay-colored bands or handkerchiefs as headwear. Most of the girls sport the badge of the R.A.V.C., backed with a crimson cloth patch embroidered "Remount Depot."

There is about Melton a quiet air of friendly discipline between all officers and subordinates which makes for smooth and efficient working. In fact, the remount depot is another sphere of the British war effort in which women, and some old men, are doing a great job!

Riders in Three Months

*by Lieutenant James Vaughan, Cavalry**

THE life of Riley! The Cavalry School's Department of Horsemanship preserves that tradition. In deadly seriousness it carries on with the spirit that made the legend.

In the old days, up to and including the year 1940, the average student who came to the Cavalry School was already a good rider. Then, too, he knew more than a little about taking care of his animal in garrison and in the field. The course made horsemen and horsemasters of good riders.

While continuing with the responsibility of the Basic and Advanced Officers' Courses, the Department of Horsemanship accepted the challenge of officer candidate instruction. The directive which established the officer candidate school course was just that—a challenge. What previously had been taught in nine months now had to be taught in a third of that time. It called for new viewpoints and techniques of instructing. It demanded a new objective.

With requirements in tactics, weapons, communications, and administration to be met, all departments of the school had to concentrate subject matter and intensify instruction. The Department of Horsemanship no longer could hold by its previous standards of perfection. Its goal no longer could be accomplished horsemen capable of top performances in jumping, polo, and dressage events. Its mission was clear.

The product of this instruction had to be new officers for horse cavalry units, who could set the example and conduct road and cross-country marches so as to preserve the condition of both men and horses. Further, young officers with limited previous experience had to be prepared to teach new soldiers the fundamentals of horsemanship and horsemastership.

The first few officer candidate classes to train at the Cavalry School were composed for the most part of picked men from horse regiments. Nearly all of the candidates had had several years of service. Quite a few were graduates of the Cavalry School's noncommissioned officers' course. Experience was a common characteristic. With these classes, the Horsemanship Department took advantage of the opportunity to try out new methods and techniques of instruction. Schedule sequences were changed, and the effects on the progress and efficiency of the average student carefully noted and evaluated. Each horse was studied to determine his suitability as a class mount.

As time went on, the experienced cavalry soldier became the exception among candidates for commissions. There was more enthusiasm than experience in these classes. Here and there among the students was a man who had ridden, owned, and shown horses previous to his induction. To even a man of this background, the military seat and the army horse were revelations.

Since learning is the process of acquiring experience, the Horsemanship Department felt keenly its responsibility for giving each individual student the maximum of experience in the limited time allotted. It was concluded that horsemanship, as it was to be taught, briefed down to four factors: *confidence, seat, hands,* and *experience.* Each instructor was directed to instill his students with the first, teach them the second and third, and advise them on the fourth. In the following paragraphs the six essentials of the Cavalry School method are described.

First: Care is taken to assign mounts with temperaments and manners appropriate to students' temperaments, capabilities, and previous riding experience. Difficult horses, or those unsuitable to individual students, delay instruction and retard the development of confidence in the student rider. A tractable, even-tempered horse teaches the student almost as much as the instructor himself.

Second: Many hours in the riding hall and sand ring are devoted to work at the walk and trot. The rate of improvement determines the extent of this phase of instruction. The hands and seat are given special attention. The progress of each student is noted carefully.

Third: Constant supervision by the instructor in charge of the class is a department doctrine. Assistant instructors see to it that the most minor faults in a student's body position, legs, and hands are corrected. Repetition of constructive criticism impresses the student with the importance of an erect but supple spine and of a seat firm but without tension. Experience has shown that it is easier to teach the military seat to men of limited or no riding experience than to those who have developed incorrect practices in their civilian riding. The completely inexperienced student normally heeds all instructions, and unless he is decidedly inapt, progresses rapidly because he entertains no preconceived ideas of his own capabilities.

Fourth: Work without stirrups at gaits other than walk comes only after the instructor has assured himself that his students have that "in the saddle" feel. The average individual, not being allowed to use his stirrups, "tenses up" the first few times his horse moves out at the trot. If he falls off, the next time that he is required to take up the trot without stirrups, he stiffens and becomes insecure in the saddle. A kind of *rigor*

*Department of Horsemanship, The Cavalry School.

t Can Be Done

mortis sets in. The man's confidence must not be shaken by too premature work without stirrups. Real balance must be acquired gradually.

Fifth: Suppling exercises are given regularly. They are great builders of balance and confidence. Instructors are cautioned not to employ them excessively. The fundamental suppling exercises are best given during periods of work at the slow gaits without stirrups.

Sixth: Students learn and are required to perfect riding hall movements. No equitation exercise of comparable value has been devised to teach men how to handle and ride their horses. They produce alertness, quicken and make more precise responses and the use of aids. Progressively, the students are required to perform riding hall movements at all gaits. The riding hall and its adjoining sand ring are the classrooms of horsemanship.

The ability to ride at controlled gaits outside of the hall and ring is the test of preliminary instruction.

Fort Riley is ideal for mounted work. Terrain of all types is available. The banks of the Republican River offer sand comparable to the desert's deep, difficult footing. For the cross-country gallop there are rolling plains. Remember Morris Hill, Machine Gun Ridge, and those far stretches over which the drag hunts were laid? The rimrock and stone quarries make for treacherous footing. So do the rock-strewn canyons, like Jug and Wildcat, with their deep swamp grasses. The ruggedness of the reservation provides many good slides which try the man-horse team.

At almost any time the instructor, who has reconnoitered his training areas well, can lead his class to mud of practically any depth and consistency. Work over this varied terrain gives a student confidence in himself and in his horse. He doesn't get it all at once. The first few times out, he rides over easy rolling country at the walk and trot, with the instructor emphasizing control of the horse and choice of footing. As the class progresses, rougher country is taken in stride at the trot and gallop.

Individual instruction is stressed, and the progress of each student is carefully noted.

Every opportunity is taken for bringing the student and horse together and welding them into a true man-horse team. Almost all of the field problems conducted by the Department of Tactics require students to be mounted.

Concurrent with equitation, other equally important and related subjects are included under horsemastership. Students receive thorough classroom and laboratory instruction in care of the animals in the field—conditioning, horseshoeing, marching, packing, and transporting animals by truck, rail, and ship.

During the last three weeks of instruction, the student is provided a generous amount of mounted work over obstacles. Jumping develops the rider's control of his horse. Mounts are selected carefully for these periods. Instructors make sure that all horses assigned are willing and able jumpers. At first, obstacles taken are just high enough to give the student a feeling of flight and are channeled in a chute to prevent runouts. The experience of going through the chute without reins and stirrups teaches the student that to remain mounted he must use his balance and his legs alone. He must not seek to support himself with his hands.

The course for officer candidates offered by the Department of Horsemanship ends with a Training Exhibition over a course of varied jumps not exceeding 3′ 6″. Some of the best performances have been turned in by candidates who learned to ride after they arrived at the school.

The horsemanship and horsemastership instruction that an officer candidate receives at the Cavalry School is comprehensive, intensive, fundamental. It produces riders who can advance to higher degrees of skill in horsemanship by adhering to the only immutable rule of this art—the daily application of the seat of the breeches to the seat of the saddle.

The completely inexperienced student usually progresses rapidly because he entertains no preconceived ideas of his own capabilities.

Remington's Cavalryman

THE subject for Frederic Remington's masterpiece was a very live and active cavalryman—Corporal, later Sergeant, Jack Lannon of Troop G, 3d Cavalry, commanded at the time by Captain Francis G. Hardie. The sketch was made in the early summer—about June —of 1898, during the period of the army concentration at Tampa, Florida, just prior to the sailing of the expeditionary forces under General Shafter for Santiago, Cuba.

At that particular time, several cavalry regiments, including the 3d, were in Tampa, engaged in various maneuvers under the command of General Joseph Wheeler, the ex-Confederate cavalry general who had been appointed by President McKinley to command the cavalry in the U. S. forces destined for operations in Cuba.

During those maneuvers, the troops would be deployed in long lines, with extended intervals, on assumed tactical positions. Carbines were generally advanced and carried resting on the forearm, as shown in Remington's picture. In these positions there would be halts for considerable periods of time, while General Wheeler, accompanied by his staff, would ride along to make observations and then issue further instructions. It is probable that Mr. Remington may have been a member of General Wheeler's party on one of these exercises, which extended for close to a month in Tampa, and that while so riding, the characteristic pose of Lannon came to Remington's attention.

It is well known that artists usually idealize their subjects, but Remington's portrayal of Lannon is almost a replica of his appearance in actual life. I knew Lannon personally for about two years. During this time I was a sergeant in Troop C, 3d Cavalry, which I later commanded as a first lieutenant. Troops C and G occupied adjoining barracks in garrison and were together in Tampa. I knew Lannon in both places and his likeness could not be mistaken for any one else. His person was most distinct. He was a man who would attract attention anywhere. About 6 feet 2 inches tall, he was lithe, agile and wore a sweeping white mustache. At the time that the picture was made, Lannon had already completed more than 30 years of enlisted service and was eligible for retirement. This would indicate that his first enlistment could not have been later than 1868. All except three years of his service was spent in the cavalry and most of it in the west.

The uniform and equipment depicted by Remington were equally as accurate as the characterization of Lannon. The campaign hat shown in the picture was at the time the standard article of issue for field service. The army had not yet adopted khaki uniforms, and participants in the Cuban Campaign wore blue shirts and blue trousers. Riding breeches had not come into vogue but made their appearance shortly after the Cuban Campaign. It was customary for men and officers alike to use trousers that had been cut off above the ankles and a slit made for a few inches on the side, with buttons attached. In the field, men wore leggings, and officers wore black boots. The McClellan saddle with wooden stirrup was standard. The overcoat was rolled in front, while the bedding was rolled and strapped to the cantle.

Lannon is shown wearing a kerchief blowing in the wind. This was possibly a red handkerchief, as considerable latitude was allowed in such matters when men were serving in the field. Lannon could not have worn this article in garrison, but there seemed to be no objection under conditions as stated. At that time neckties were unknown for field wear, and many men often had the top button of their shirts open. The necktie for field wear commenced to make its slow appearance in the days of protacted tours on the Mexican border. At first a few, then many, troop commanders serving at detached points encouraged the informal wear of a black four in hand tie until gradually this article of adornment was incorporated in the uniform regulations.

The belt across Lannon's shoulders was the sling belt, which was standard equipment at the time. It terminated in a snap buckle hooked into a movable ring adjusted to the middle of the stock of the carbine. When a man was dismounting in the field he

The Cavalry Journal Cover

For almost forty years—from January, 1903, until August, 1942—Remington's etching of "The Cavalryman" was printed on the front cover of each issue of The Cavalry Journal.

At the time that Frederic Remington made the etching, it was a realistic portrayal of a U. S. cavalryman—his uniform, his manner, his equipment, his mount. It represented, not only the spirit, but the outward appearance of the cavalry, which had ridden in the vanguard and protected the flanks of a great nation moving westward across the plains and mountains amid Indians and wilderness.

Times have changed, and so has the cavalryman's uniform, his equipment, and sometimes his mount. The cover of The Cavalry Journal, in keeping with the trend of the day, now carries photographs of modern battle, new equipment and current heroes. But Remington's cavalryman still remains a symbol of the spirit of the cavalry. As such, he has been placed in a frame, on the back cover, where, it is hoped, he will remain indefinitely as representative of the courage, the stamina, the loyalty, the strength that was and is fundamental in the cavalry spirit.

would draw and snap the carbine at the end of the sling belt and, throwing the carbine over the right shoulder, he would dismount, then return the carbine to the hands, unsnap the buckle, and have free use of the weapon.

The carbine in use at the time was the Springfield caliber .30, which had been issued to the cavalry not more than one year before to replace the old .45 caliber carbine. The infantry had had the .30 caliber Springfield rifle for a longer period, but the new carbine for cavalry came later.

Carrying the new .30 caliber carbine on the horse was a problem that took several years to solve. The old carbine boot, in which the .45 caliber carbine was carried, was adjusted to the cantle on the saddle. Inclined forwards, it gave a very comfortable and easy position for the weapon. But the new carbine could not be carried there because of the bolt which projected against the side of the horse. A new carbine boot had been provided and adjusted in a forward position attached to the pommel. In most regiments this boot was carried on the right side, and the saber was left in its old position on the left side, as shown in the Remington picture. The new boot elevated the position of the carbine so that the bolt did not strike against the horse's flesh. In some regiments, however, where the bolt problem was seen in a different light, the carbine was transferred to the left, and the saber to the right. Finally, this arrangement became the standard practice.

In the field, the halter was worn under the bridle, and the halter strap was tied to the left pommel ring. The old style shoemaker curb bit and the buckskin leather gauntlet with cuffs were standard items of issue. Another article of equipment was the lariat and picket pin, carried by all cavalrymen. These were relics of Indian Campaign days in which the practice of picketing horses at night in lieu of long forage was customary.

The Cuban Campaign was very short, but the Philippine insurrection, which came quickly afterwards, created many changes in equipment and uniform. Step by step, the army threw off the old and adjusted itself to the new.

I did not see Lannon pose for Remington. If I had, no one would have considered that important at the time, nor would it have established an infallible link between what I might have seen and what exists today. The important point is that in this sketch, those who knew Lannon recognize him beyond any doubt. It must be appreciated that, after all, Remington did not go to Tampa to make a rendering of Lannon. He was an artist, and like the newspaper men, went to Tampa to search out material covering the war. Undoubtedly, he made many sketches. That was his business.

As so often happens with the work of artists, time

seems necessary for full appreciation of their work. Today, all can see that Remington in this particular sketch left a memento to the cavalry that will increase in value as time removes it in distance. In this particular case, it was not until some four years later that Remington's etching first appeared on the cover of THE CAVALRY JOURNAL, at which time everyone in the 3d Cavalry was able to recall that it was Lannon's likeness that was represented. Lannon died while with the occupation forces in Cuba but I recall talking at that time with the Adjutant, Captain (later Lt. Colonel) Henry L. Ripley who, prior to the first appearance of the picture on THE CAVALRY JOURNAL cover, remembered Lannon posing for Remington. Some years before these events Remington, in gathering material for his book, "The West from a Car Window," had visited with Hardie. It is possible that in renewing the acquaintance in Tampa in 1898, Captain Hardie may have directed Remington's attention to this particular trooper as a subject for a sketch.

Since I remained in the 3d Cavalry until 1914, all this information is impressed very clearly on my mind.

As depicted by Remington, Sergeant Lannon was an outstanding product of his day—a figure worthy to be symbolic of the cavalry in any day.

Book Reviews

HERE IS YOUR WAR. By Ernie Pyle. Henry Holt & Company. $3.00.

Ernie Pyle needs no introduction to millions of newspaper readers who turn to his column before doing more than scan the headlines. Those who do require an introduction should waste no time in reading this book.

Columns could be written to review *Here Is Your War,* but they would be inadequate beside the following quotation from the book itself—its own best commentary:

"I haven't written anything about the Big Picture, because I don't know anything about it. I only know what we see from our worm's-eye view, and our segment of this picture consists only of tired and dirty soldiers who are alive and don't want to die; of long darkened convoys in the middle of the night; of shocked, silent men wandering back down the hill from battle; of chow lines and atabrine tablets and foxholes and burning tanks and Arabs holding up eggs and the rustle of high-flown shells; of jeeps and petrol dumps and smelly bedding-rolls and A rations and cactus patches and blown bridges and dead mules and hospital tents and shirt collars greasy-black from months of wearing; and of laughter, too, and anger and wine and lovely flowers, and constant cussing. All these it is composed of; and of graves and graves and graves."

AMERICAN GUERRILLA. By Captain Douglas M. Smith and Cecil Carnes. Bobbs Merrill Co. $3.00.

Underlying this very readable and extremely interesting book is the important story of a new type of warfare, or, more exactly, a newly organized technique of a very old method of warfare.

An American by birth and heritage, Captain Smith served in the French Foreign Legion as a second lieutenant in the first World War. Before he re-joined the Legion in 1941, he made a thorough study of what he believed would be an important phase of this war—trained guerrilla fighting.

In *American Guerrilla,* Captain Smith tells of his belief in the efficacy of trained men working behind enemy lines. When his own desire to organize such a group was frustrated, he joined David Stirling's "Bunch" in Middle East, culled from French and English volunteers. The story of what these men did makes exciting reading. But more than exciting are the practical lessons learned by the author during his participation in this type of warfare.

Captain Smith was sent to America to survey and collect equipment suitable for use by guerrilla fighters. It was while on this trip that he gave his story to Cecil Carnes, who has done a splendid job of presenting a vivid picture of a hitherto unrecorded phase of modern military activity.

CAVALRY JOURNAL readers will recall that the Bengazi raid was written up by Captain Smith for the May-June, 1943, issue.

MAKERS OF MODERN STRATEGY. Edited by Edward Mead Earle. Princeton University Press. $3.75.

This book is an outgrowth of the famous seminar on military affairs which began several years before the outbreak of the war, and was conducted at the Institute for Advanced Study by Mr. Earle.

The important figures influencing military strategy, from Machiavelli to Hitler, are ably analyzed by authorities on the men and their eras. The authors of the various chapters include Crane Brinton, professor of history, Harvard; Gordon A. Craig, assistant professor of history, Princeton University; Hajo Holborn, professor of history Yale University, Hans Rothfels, author of *Carl von Clausewitz, Politik und Krieg,* visiting professor of history, Brown University, and others of equal note, both American and European.

The material congregated in this book could be obtained only by the careful and thorough reading of a voluminous library—an act requiring more time than any active man has today. It is here carefully selected and presented by men eminently equipped to sift the material and preserve that which is essential.

This will probably prove to be one of the most valuable books compiled for students of military strategy.

NAPOLEON AND MODERN WAR. By Colonel Conrad H. Lanza. Military Service Publishing Co. $1.00.

The Military Service Publishing Company is to be highly complimented on the excellent series of small, inexpensive, and splendidly prepared books now being issued as *Military Classics.*

The latest addition to this series is an annotated copy of Napoleon's Maxims. Colonel Lanza has prepared a book that all military men familiar with the earlier books in the group will want to add to their collection. He has wisely not neglected to give a chronology and ample index to enhance the value of the book.

THE FRAMEWORK OF BATTLE. By Lt. Colonel John G. Burr. J. B. Lippincott & Co. $3.00.

Colonel Burr has written this book as a guide for laymen. He explains the technique of warfare, how campaigns are planned, why certain strategy is followed, and what goes on in the minds of officers in command of armies.

In view of the number of treatises written in recent months by amateur and armchair strategists criticizing the planning and conduct of the war, it is to be hoped that this book will be widely read. It should enable civilians to grasp more intelligently the mechanics of warfare.

THE SHARPS RIFLE. By Winston O. Smith. William Morrow and Company. $3.00.

There is increasing interest on the part of marksmen, historians, and collectors, in the firearms of the Nineteenth Century, particularly in the first successful breech-loading rifle invented in 1848 by Christian Sharps.

Going to original sources and discovering much material hitherto unpublished, the author presents the complete story of the Sharps rifle. He gives its background, traces its development through the various manufacturers responsible for it, and discusses its use as a military weapon.

Of interest to collectors today are charts on the identification of models and considerable material on care, operation, maintenance, manufacturers of cartridges, and table of loads.

The sketches are excellent and the index and chronology as well as the appendix provide important references.

* * *

THE DUKE. By Richard Aldington. The Viking Press. $3.75.

The fact that by defeating Napoleon at Waterloo, the Duke of Wellington closed the career of the greatest military genius of his era would have been enough in itself to attract biographers. Added to this was an ability, displayed throughout his life, to make the best of any military situation—an attribute which commands respect and admiration from any generation of soldiers. This ability was the result of his misfortunes as well as his personal qualities.

Constantly held back in rank, Wellington made a careful study of the needs of each command that he held. The knowledge thus acquired stood him in good stead, when in later years, as a general, he knew each detail of his army and was able to do what many of his generation could not do, see the picture in detail down to its finest point, and utilize his men accordingly.

Unlike most novelists turned biographers, Mr. Aldington has not allowed his imagination and command of English to run away with facts. He has used them to enhance a life, interesting in itself, and has produced a fascinating and delightful biography of the man who started his career with little hope of advancement, and ended it as one of the most essential figures in the life of the British Empire.

* * *

MOTHER AMERICA. By Colonel Carlos P. Romulo. Doubleday, Doran & Co. $2.50.

Colonel Romulo, winner of the Pulitzer Prize for newspaper articles on the Orient, and author of *I Saw the Fall of the Philippines*, has written another arresting book. Men through the ages have said in many ways what Burns stated most simply, "Wad God some power the giftie gie us, to see oursel's as ithers see us!" Colonel Romulo offers the white race the unpleasant privilege of viewing itself in the mirror of Oriental opinion. It is not a healthy image reflected there.

The author gives a brief history of the Philippines and the milestones in their fight for independence. He holds American colonial policy up as a model for all nations with possessions in the east, and points out that of all colonials in the Pacific area, only the Filipinos fought as a people united beside their rulers.

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THE BATTLE IS THE PAY-OFF. By Captain Ralph Ingersoll. Harcourt, Brace & Co. $2.00.

Having enlisted, taken his basic training and gone to O.C.S., Captain Ingersoll writes as a soldier, and not as an observer, of his own reactions to his baptism by fire.

In speaking of the American public, the author states, "I have found out two things about you since I got back from Africa. One is that the gaps in your knowledge of the Army are big, obvious, and unnecessary; and, two, that you really want to know." It is to fill in these gaps, and satisfy this desire to know that he has written the story of El Guettar as he saw it, from the time that orders were issued to his company of combat engineers. He tells what they did, and how they did it, and how they felt under fire. There are few little personal anecdotes, but there is much forceful writing on the subject of the army and the way it works.

Although this book is written primarily for the civilian, in order that he may understand some of the whys and wherefore of the army, soldiers will also find it both interesting and important.

NEW ZEALAND. By Walter Nash. Duell, Sloan & Pearce, Inc. $3.50.

Americans have always been strongly attracted toward New Zealand and Australia. A number of books have been written to familiarize us with the latter, but correspondingly few have been published on the other island country.

Mr. Nash rounded out his mission as New Zealand's minister to this country by writing this book. Comprising a complete picture of New Zealand's resources, men, history and life, this book makes a valuable contribution to our national knowledge.

BRIDGE TO VICTORY. By Howard Handleman. Random House. $2.00.

Mr. Handleman has written in thoroughly good newspaper style a graphic description of fighting in the Aleutians. He has successfully captured the atmosphere of these bases—cold, foggy and miserable.

His greatest weakness is his desire to quote the doughboy's point of view. Had he given his own reactions more fully the reader would indirectly have got as full a picture with less choppiness.

THIS IS INDIA. By Peter Muir. Doubleday, Doran & Co. $2.50.

Although this book contains much material based on fact, it falls far short of being among the first run of books on India. Its value as an "unbiased" book can best be judged by the fact that the first four chapters are sarcastically condemnatory of the Indian people.

WORLD WAR II. By Major Frank Monaghan. J. G. Ferguson and Associates. DeLuxe Edition, $7.50. Trade Edition, $5.00.

Watch the next issue for review of this fascinating history of World War II.

WEATHER AROUND THE WORLD. By Ivan Ray Tannehill. Princeton University Press. $2.50.

Weather Around the World, as its name implies, describes weather conditions on land and sea, in all quarters of the globe. Although intended for laymen, professionals will find this book of value if only for the descriptions and charts of weather data in 185 key places in the world.

The photographs not only well illustrate the text, but are excellent examples of camera art.

* * *

ANIMAL REVEILLE. By Richard Demperwolfe. Doubleday, Doran & Co. $3.00.

Stories of animals have always had a certain appeal, and Mr. Demperwolfe has filled his book with many interesting anecdotes. Many of them, however, are amusing incidents rather than examples of the practical use of animals in the war.

There are passages of excellent description, such as the account of General Dovator's use of cavalry south of Moscow. Even these portions of the book are weakened by statements of questionable veracity, such as: "Taking a tip from Russia and Germany, America concentrated on cavalry, buying up the best animals the country had to offer."

* * *

YOUR BROTHER'S BLOOD CRIES OUT. By William Gropper. Portfolio. The ACA Galleries. $5.00.

Gropper has again turned his talents to war and produced an excellent series of drawings, which those interested in propaganda art will find equally as valuable as the series by the same artist on the Spanish Civil War.

* * *

THE ARMY PLAY BY PLAY. By Members of the Armed Forces. Random House. $2.00.

When John Golden offered prizes for the best one-act plays by members of the armed forces, 115 presentable scripts were submitted. This book contains the five plays adjudged the best. They were a success on Broadway, and are now on tour to raise funds for the Soldier's and Sailor's club.

With one possible exception, they are good theater.

* * *

BEST CARTOONS OF THE YEAR 1943. Edited by Lawrence Lariar. Crown Publishing Co. $2.00.

Just as the name implies, this book brings to cartoon fans a collection of the cleverest examples of the year. Cartoons always provide an amusing commentary on the life of an era, and the past year has offered ample material with which to work.

* * *

TEACHERS MANUAL. By Lt. Commander Nicholas E. Moseley. Cornell Maritime Press. $2.00.

Written for military, marine, vocational and industrial training, this text offers all teachers a few sound lessons in the fundamental psychology of teaching adults.

A handy guide to correct military writing practice

that takes the place of 10 or more Army regulations and manuals.

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MILITARY CORRESPONDENCE AND REPORTS

By A. C. HOWELL
University of North Carolina

190 pages, 5½ x 8 in., $1.50

Here is the much-needed single guidebook on military writing that gives in one ready source the accepted army practice for preparing military letters, orders, reports, and other forms requiring original composition. This book provides the young officer or trainee with an authentic guide and text on army writing requirements and will aid him in developing good military style and the necessary skill required for military communication.

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Here Are This Month's New Books of Current Interest

T- 1 **Aerial Warfare.** *By Hal Goodwin.* The story of the airplane as a weapon. ..... $.69

T- 2 **Aircraft Identification for Fighting Airmen.** *By Clayton Knight.* A spotter's handbook, illustrated with photographs and diagrams of the Allied and Axis planes in various flying positions. $1.50

T- 3 **American Guerrilla.** *By Captain Douglas M. Smith and Cecil Carnes.* An exposition of the art of guerrilla warfare and an account of the author's guerrilla operations with the French Foreign Legion. $3.00

T- 4 **Battle Is the Pay-Off.** *By Ralph Ingersoll.* A soldier's baptism by fire. $2.00

T- 5 **Best Cartoons of the Year.** *Edited by Lawrence Lariar.* A selection of the year's cartoons. .. $2.00

T- 6 **Bridge to Victory.** *By Howard Handleman.* The first complete account of the reconquest of the Aleutians. $2.00

T- 7 **The Duke.** *By Richard Aldington.* The life and achievements of the Duke of Wellington. ..$3.75

T- 8 **Feeding Our Armed Forces.** *By Eleanor Hoffmann.* How we feed our fighting men. $1.75

T- 9 **Fifteen Decisive Battles of the World.** *By Sir Edward S. Creasy and Robert Hammond Murray.* $3.

T-10 **The Framework of Battle.** *By John B. Burr.* A layman's guide to the technique of warfare. Illustrated with military maps. $3.00

T-11 **The Infantry Journal Reader.** *Selected and edited by Col. Joseph I. Greene.* Contributors include: Maj. Gen. Chennault, B. H. Liddell Hart, Admiral Sims, General MacArthur, Harold Lamb, Yank Levy, Lieut. Gen. Patton, Fletcher Pratt, Lieut. Gen. Stilwell and General Summerall. $3.00

T-12 **Kilgour's Mare.** *By Henry G. Lamond.* A story of an Australian man and his horse. $2.00

T-13 **Legal Effects of Military Service.** *By Ganson J. Baldwin and John Kirkland Clark, Jr.* Paper covers, $2

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